MZ-R37

SERVICE MANUAL

Self Diagnosis Supported model

Ver 1.1 1999. 04

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Tourist Model

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	MZ-R55
MiniDisc Mechanism Type	MT-MZR37-161
Optical Pick-up Type	KMS-280A

SPECIFICATIONS

System

Audio playing system
MiniDisc digital audio system

Laser diode properties
Material: GaAlAs
Wavelength: λ = 780 nm
Emission duration: continuous
Laser output: less than 44.6 µW
(This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block with 7 mm aperture.)

Recording and playback time
Maximum 74 minutes (MDW-74, stereo recording)
Maximum 148 minutes (MDW-74, monaural recording)

Revolutions
400 rpm to 900 rpm (CLV)

Error correction
Advanced Cross Interleave Reed Solomon Code (ACIRC)

Sampling frequency
44.1 kHz

Sampling rate converter
Input: 32 kHz / 44.1 kHz / 48 kHz

Coding
Adaptive TRansform Acoustic Coding (ATRAC)

Modulation system
EFM (Eight to Fourteen Modulation)

Number of channels
2 stereo channels
1 monaural channel

Frequency response
20 to 20,000 Hz ± 3 dB

Wow and Flutter
Below measurable limit

Inputs
MIC (PLUG IN POWER): stereo mini-jack, 0.35–1.38 mV
(OPTICAL) LINE IN: stereo mini-jack with optical (digital) in
• Line in: 69–194 mV
• Optical (digital) in: wave length 660 nm

Outputs
PHONES/REMOTE: stereo mini-jack, maximum output level 5 mW + 5 mW, load impedance 16 ohm
LINE OUT: stereo mini-jack, 194 mV, load impedance 10 kilohm or greater

General

Power requirements
Sony AC Power Adaptor (supplied)
connected at the DC IN 4.5 V jack:
120 V AC, 60 Hz (US, Canadian model)
220–230 V AC, 50/60 Hz (AEP model)
230–240 V AC, 50 Hz (UK model)
240 V AC, 50 Hz (Australian and New Zealand model)
Two nickel-cadmium rechargeable batteries NC-AA (supplied)
Two LR6 (size AA) alkaline batteries (not supplied)

– Continued on next page –

PORTABLE MINIDISC RECORDER

MICROFILM

SONY®

Battery operation time[1)]

Batteries	Recording[2)]	Playback
Two NC-AA nickel-cadmium rechargeable batteries	Approx. 3 hours	Approx. 5 hours
Two LR6 (size AA) Sony alkaline dry batteries	——[3)]	Approx. 13 hours

[1)]The battery life may be shorter due to operating conditions and the temperature of the location.
[2)] When you record, use fully charged rechargeable batteries.
[3)] Recording time may differ according to the alkaline batteries.

Dimensions
Approx. 116.8 × 18.5 × 86.1 mm (w/h/d)
(4 5/8 × 3/4 × 3 1/2 in.)

Mass
Approx. 160 g (5.6 oz) the recorder only
Approx. 220 g (7.8 oz) incl. a recordable MD, and two NC-AA nickel-cadmium rechargeable batteries

Supplied accessories
Optical cable (1) (MC-918)
AC power adaptor (1) (AC-MZR37)
Headphones with a remote control (1) (SZR-S17)
NC-AA nickel-cadmium rechargeable batteries (2)
Rechargeable battery carrying case (1)

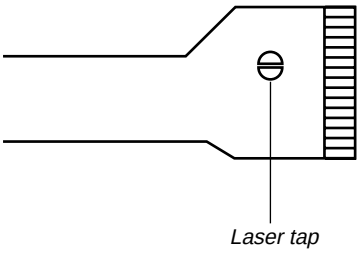
Design and specifications are subject to change without notice.

Precautions for Laser Diode Emission Check

When checking the emission of the laser diode during adjustments, never view directly downwards as this may lead to blindness.

Precautions for Using Optical Pick-up (KMS-280A)

As the laser diode inside the optical pick-up damages by static electricity easily, solder the laser tap of the Optical pick-up flexible board when handling. Also take the necessary measures to prevent damages by static electricity. Handle the Optical pick-up flexible board with care as it breaks easily.



Optical Pick-up flexible board

This MiniDisc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

“MD WALKMAN” is a trademark of Sony Corporation.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING!!

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION.
REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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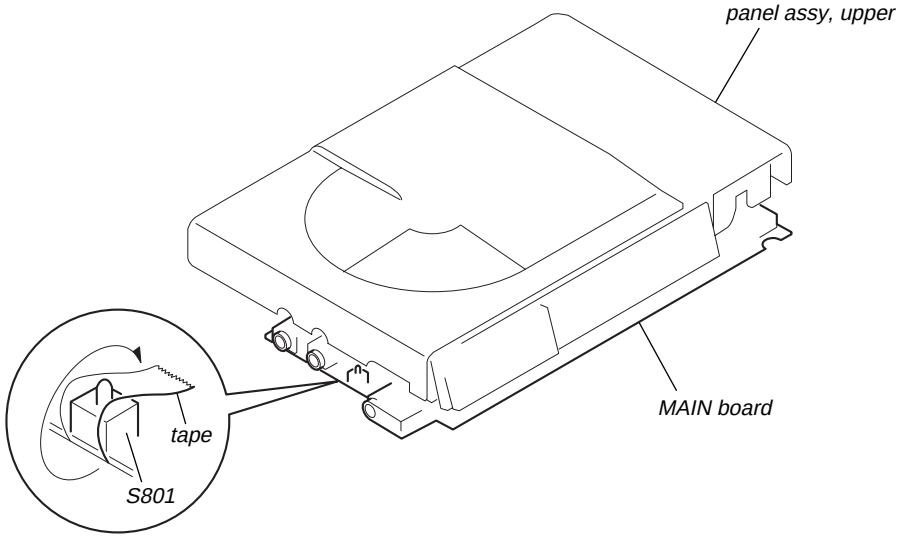
SERVICING NOTE

1) When repairing this device with the power on, if you remove the main board or open the upper panel assy, this device stops working.
In this case, you can work without the device stopping by fastening the hook of the OPEN1 switch (S801) with tape.



2) This set is designed to perform automatic adjustment for each adjustment and write its value to EEPROM. Therefore, when EEPROM (IC803) has been replaced in service, be sure to perform automatic adjustment and write resultant values to the new EEPROM.
Refer to page 12 for details.

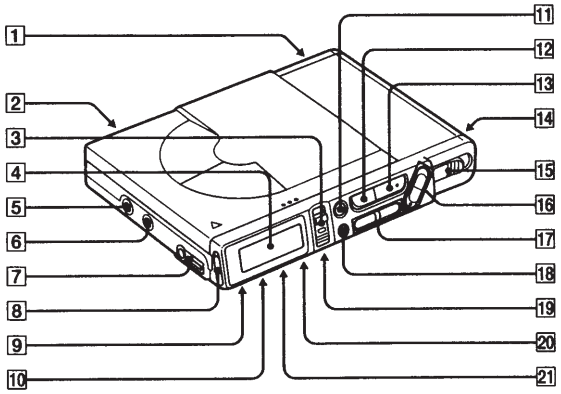
SECTION 1
GENERAL

This section is extracted from instruction manual.

Looking at the controls

See pages in ( ) for more details.

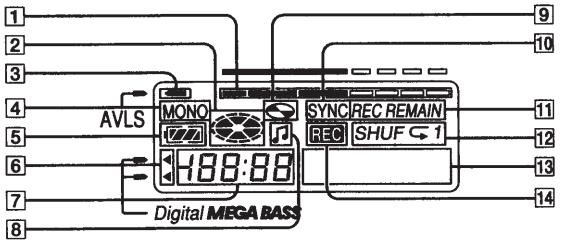
The recorder



1 Battery compartment (23)
2 MIC (PLUG IN POWER) jack (12)
3 REC (record) switch (7)
4 Display window (14, 16)
5 (OPTICAL) LINE IN jack (6, 11)
6 LINE OUT jack (17)
7 PHONES/REMOTE jack (8)
8 HOLD switch (17)
9 Digital MEGA BASS•AVLS button (at the bottom) (15, 16)
10 SYNCHRO REC (Synchronized-recording) switch (at the bottom) (11)

11 ⏸ (pause)•CAPS button (7, 9, 21)
12 ■ (stop)•CHARGE button (7, 9, 23)
13 ► (play)•ENTER button (7, 9, 18)
14 DC IN 4.5V jack
15 OPEN switch
16 VOL (volume) +/– buttons (9, 21)
17 ⏮ / ⏭ buttons
18 END SEARCH button (7)
19 T MARK (track mark)•CANCEL button (at the bottom) (19, 21)
20 MODE•DELETE button (at the bottom) (13, 15, 21)
21 DISPLAY•EDIT•INSERT button (at the bottom) (14,16,18, 21)

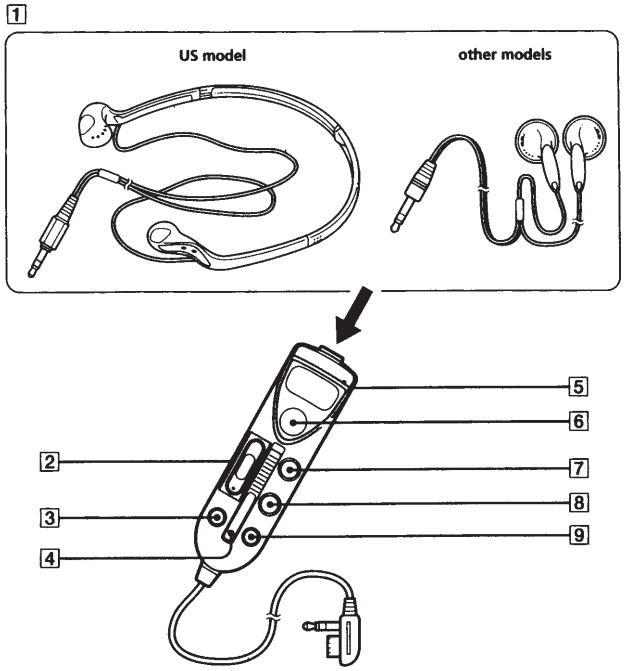
The display window



1 Level meter
Shows the level of the MD being played or recorded.
2 Disc indication
Shows that the disc is rotating for recording, playing or editing an MD.
3 ▬ mark: AVLS indication (16)
4 MONO (monaural) indication
5 Battery indication (23)
6 ◂ or ⁞ mark: MEGA BASS indication (15)
7 Time display (14, 16)
Shows the elapsed time of the track or MD being recorded or played.
8 ♪ mark (18, 21, 22)
Lights up when the track information is displayed or edited.
9 mark (19, 21, 22)
Lights up when the disc information is displayed or edited.
10 SYNC (Synchronized-recording) indication (11)

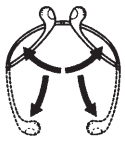
11 REMAIN/REC REMAIN (remaining time/tracks) indication (14, 16)
REMAIN lights up along with the remaining time of the track or disc, or remaining number of tracks.
REC REMAIN lights up along with the remaining time available on the MD for recording.
12 Play mode indication (15)
Shows the play mode of the MD.
13 Character information display
Displays the disc and track names, error messages, track numbers, etc.
14 REC indication (7)
Lights up while recording. Flashes when standing by for recording.

The headphones with a remote control



1 Headphones
Can be replaced with optional headphones.
2 VOL (volume) •POSITION +/– button (9, 21)
3 DELETE button (21)
4 HOLD switch (17)
5 ⏮ ►•⏭ button
6 ■ (stop)•ENTER button (7, 9, 18)
7 ⏸ (pause)•CAPS button (7, 9, 21)
8 T MARK•CANCEL button (18)
9 EDIT•INSERT button (18, 19, 21)

For customers in the United States
Unfold the supplied headphones as shown in the illustration below.



SECTION 2
SELF-DIAGNOSTIC

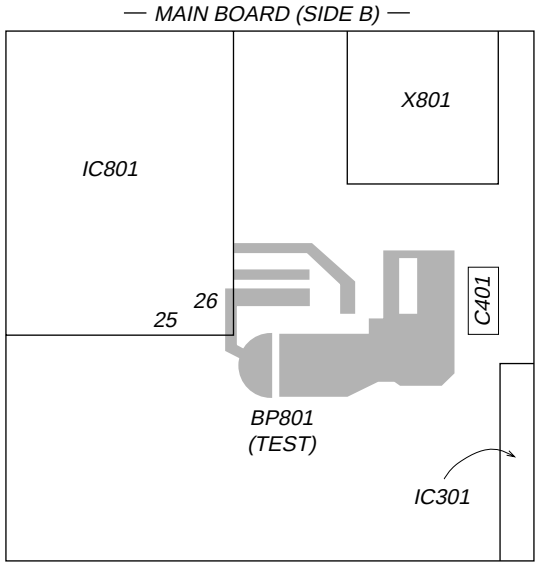
2-1. GENERAL

This set uses the self-diagnostic system in which if an error occurs in playback/recording mode, the error is detected by the model control and power control blocks of the microprocessor and information on the cause is stored as history in EEPROM.
By viewing this history in test mode, it helps you to analyze a fault and determine its location.

2-2. TEST MODE SETTING

There are two different methods to set the test mode:

① Short BP801 (TEST) on the main board with a solder bridge (connect pin ㉖ of IC801 to the ground). Then, turn on the power.

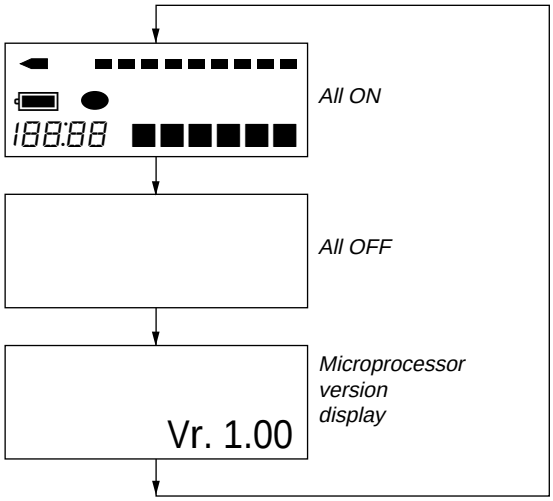


② In the normal mode, use the keys on the unit to perform the following operations:
Press and hold down ► and press the keys below in this turn:
▶▶| → ▶▶| → |◀◀ → |◀◀ → ▶▶| → |◀◀ → ▶▶| → |◀◀ → ❚❚ → ❚❚

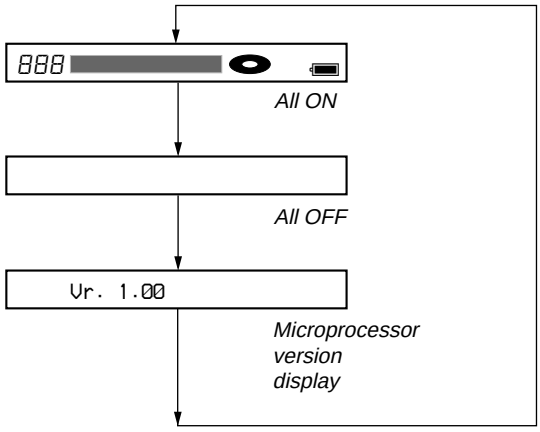
2-3. OPERATION IN TEST MODE SETTING

When the test mode is set, the LCD shows repeated cycles of the following display:

1) Unit LCD



2) Remote controller LCD



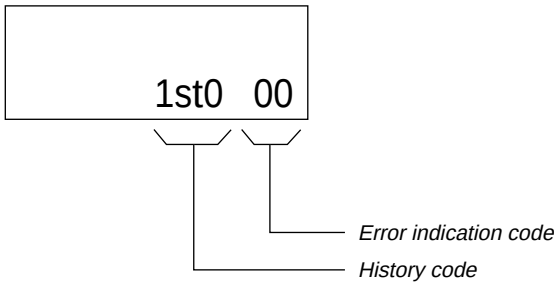
• Holding down ❚❚ allows the current display to be maintained while it being depressed.

2-4. RELEASING THE TEST MODE

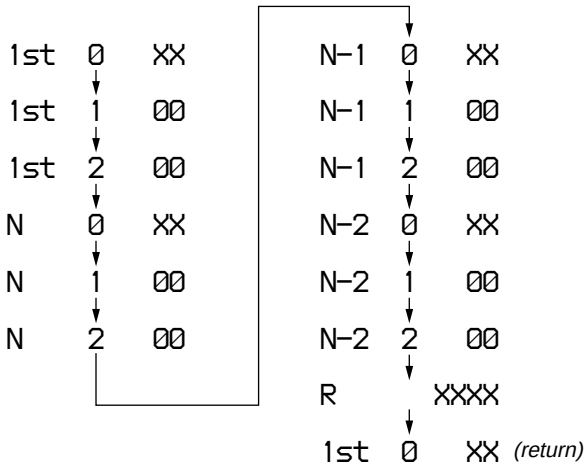
For test mode set with the method ①:
Turn off the power and open the solder bridge on BP801 on the main board.
For test mode set with the method ②:
Turn off the power.

2-5. SELF-DIAGNOSTIC MODE

1. Go into the test mode.
2. With the unit LCD indicators all flashing, press DISPLAY key to go into the self-diagnostic mode.



3. Then, each time ▶▶ key is pressed, the reference information display changes as given below.



• Press |◀◀ key to go back to the previous display.

• Description of History Codes

History code number	Description
1st 0	The first error
1st 1	00 indicated
1st 2	
N 0	The last error
N 1	00 indicated
N 2	
N-1 0	One error before the last.
N-1 1	00 indicated
N-1 2	
N-2 0	Two errors before the last.
N-2 1	00 indicated
N-2 2	
R	Total recording time *1)

*1) Total recording time
Total recording time is recorded in minutes as an index for load to the OP. It is recorded in hexadecimal format and up to 65,535 min. (about 886 discs of 74-minute disc) can be counted. It returns to "0000h" when recorder goes beyond this limit.
Example : REC 000A → Approx. 10 min.
REC 00A0 → Approx. 160 min.
REC 0A00 → Approx. 2,560 min.

• Description of Error Indication Codes

Problem	Indication code	Meaning of code	Description
No error	00		
Abnormal stop during recording	01	Servo error	Abnormal disc RPM. Focus out of alignment. Attempt to access an abnormal address.
	02	ADIP read error	Unable to read the ADIP address.
	03	Shock detected during write	Jumped by 1.5 tracks or more due to shock during write.
	04	Shock detected during laser down	Shock detected when laser was moving down.
Abnormal stop during playback	11	No focus applied	Focus could not be applied.
	12	CRC error	Unable to read the address.
	15	FG error	Abnormal rotation of disc.
Abnormal stop of recording/playback caused by power system	21	Lower voltage due to overload	Power voltage reduced due to overload.
	22	Momentary interruption	Momentary interruption detected.
	23	Lower power voltage in motor system	Power voltage for motor continuously reduced to less than 1V.
	24	Low power voltage in DSP	

2-6. CLEARING THE ERROR INDICATION CODE AND TOTAL RECORDING TIME

After repair, reset the error indication code.
Reset the total recording time when you have replaced the OP.

1. Go into the self-diagnostic mode. (See page 5.)
2. To reset the error indication code, slide REC ➞ key when the code is displayed.
   (All data including 1st, N , N-1 and N-2 are reset.)
3. To reset the total recording time, slide REC ➞ key when the time is displayed.

SECTION 3
DISASSEMBLY

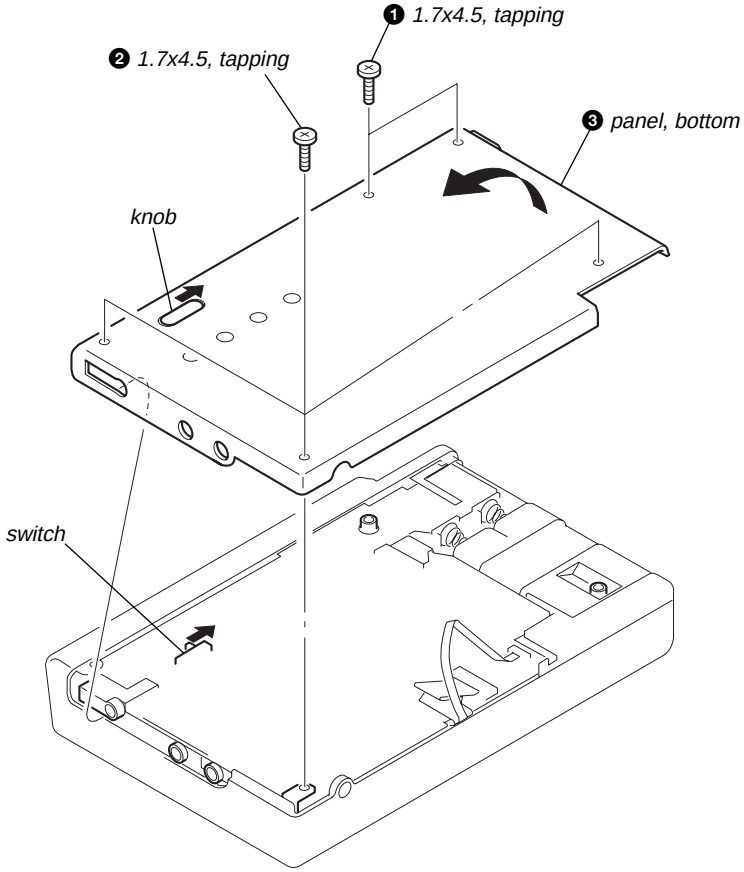
Note : This set can be disassemble according to the following sequence.

Set → Panel, Bottom → Panel (SV) Assy, Front → LCD Module

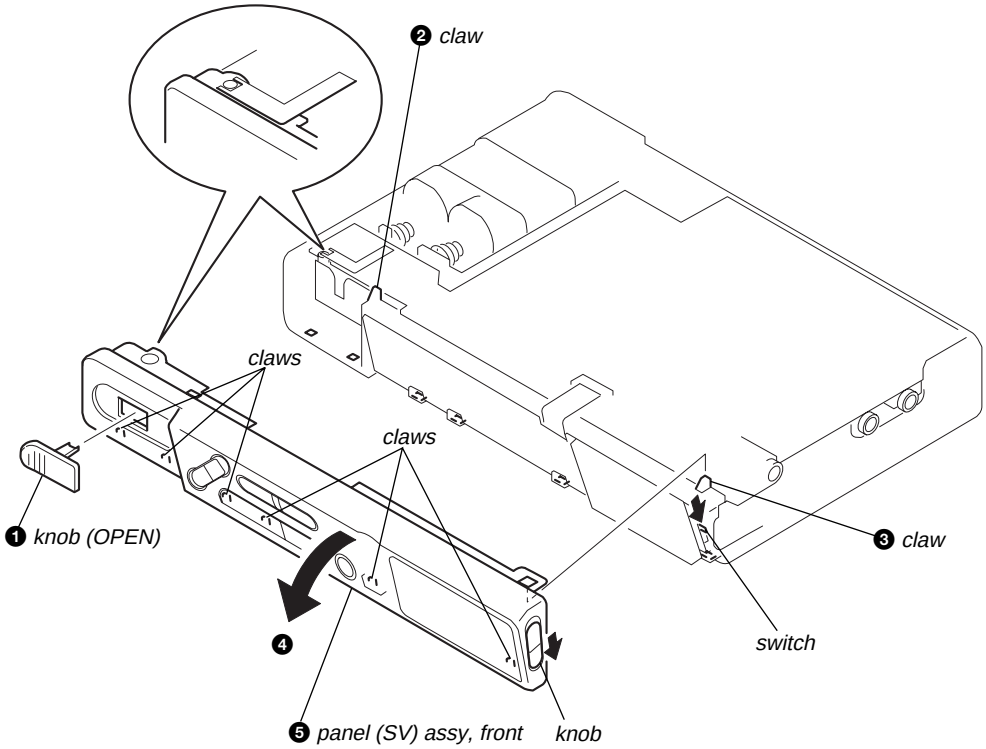
Connector → Main Board → Panel (SV) Assy, Upper → Cabinet (SV) Assy → OP Block Assy → Holder Assy

Note : Follow the disassembly procedure in the numerical order given.

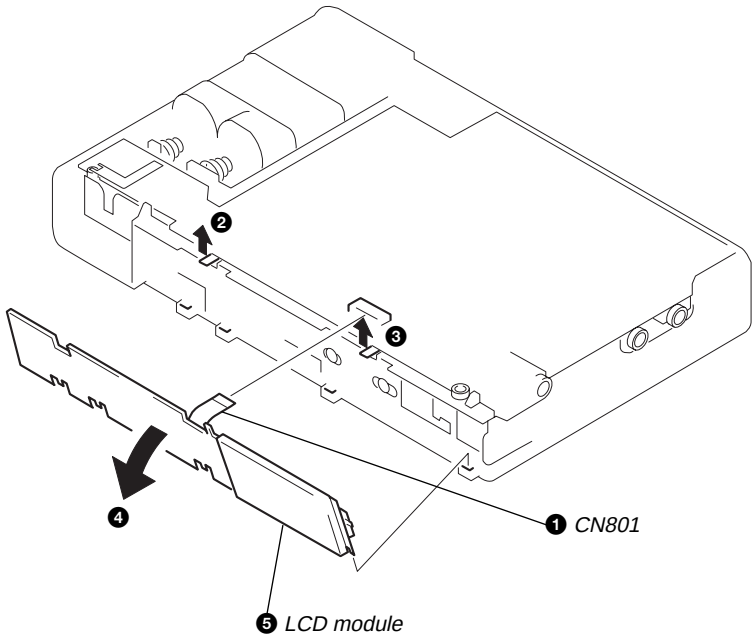
3-1. PANEL, BOTTOM



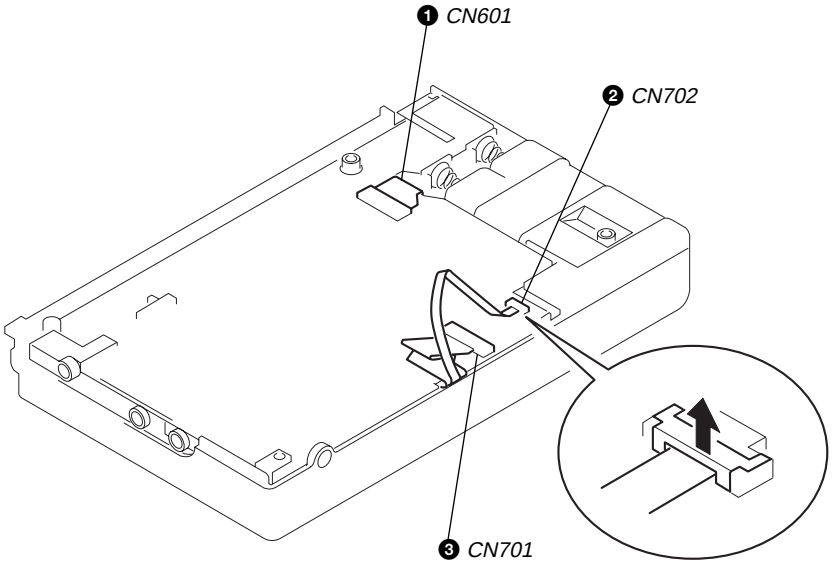
3-2. PANEL (SV) ASSY, FRONT



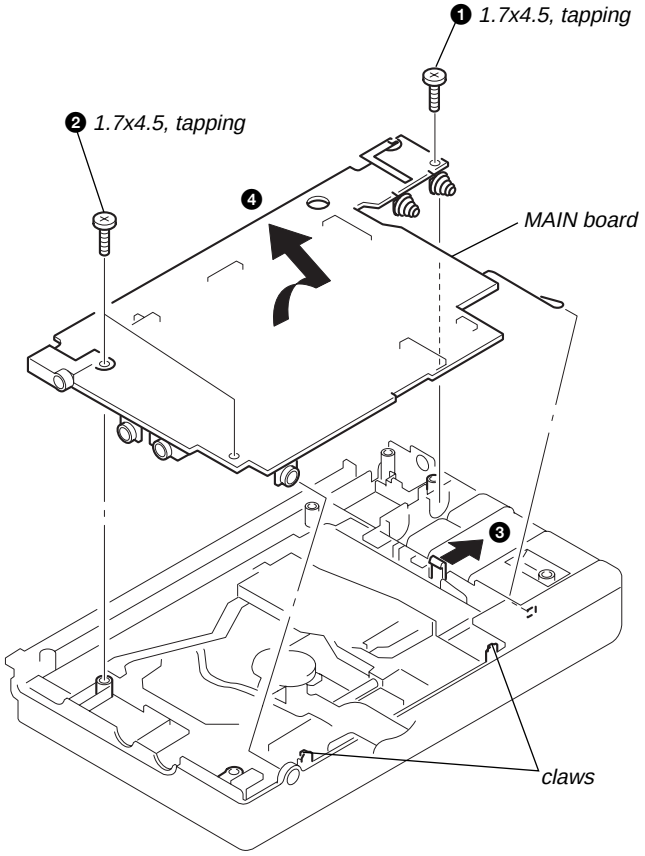
3-3. LCD MODULE



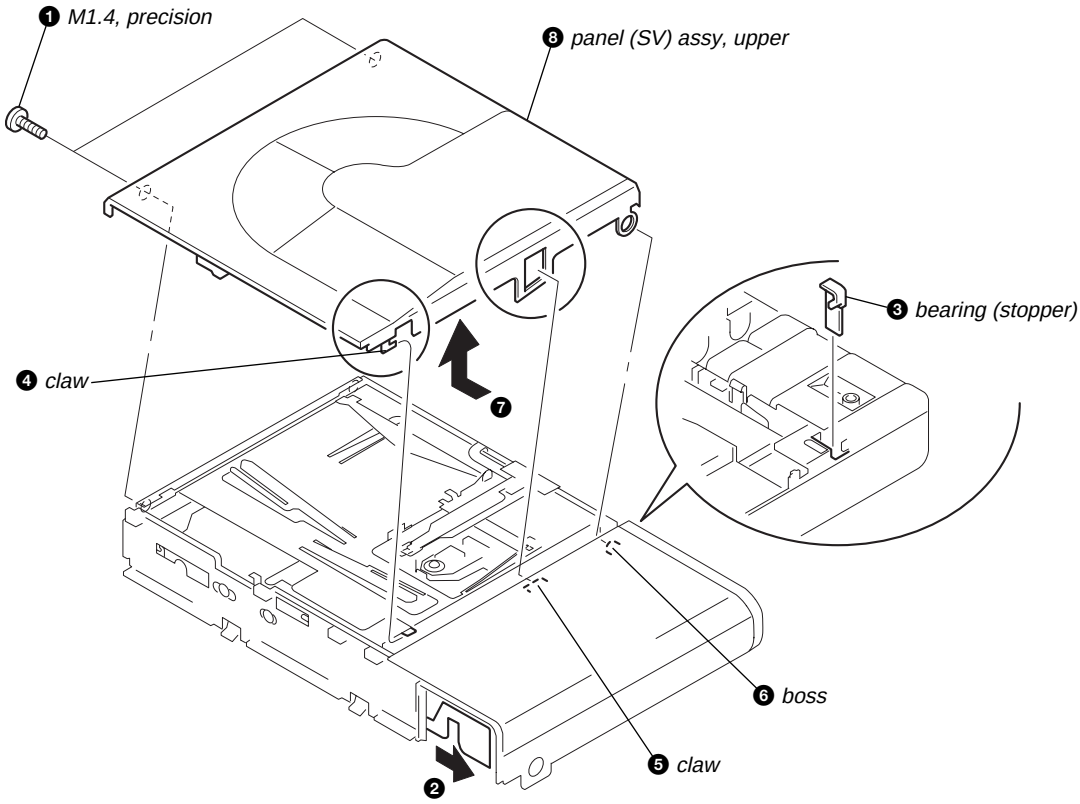
3-4. CONNECTOR



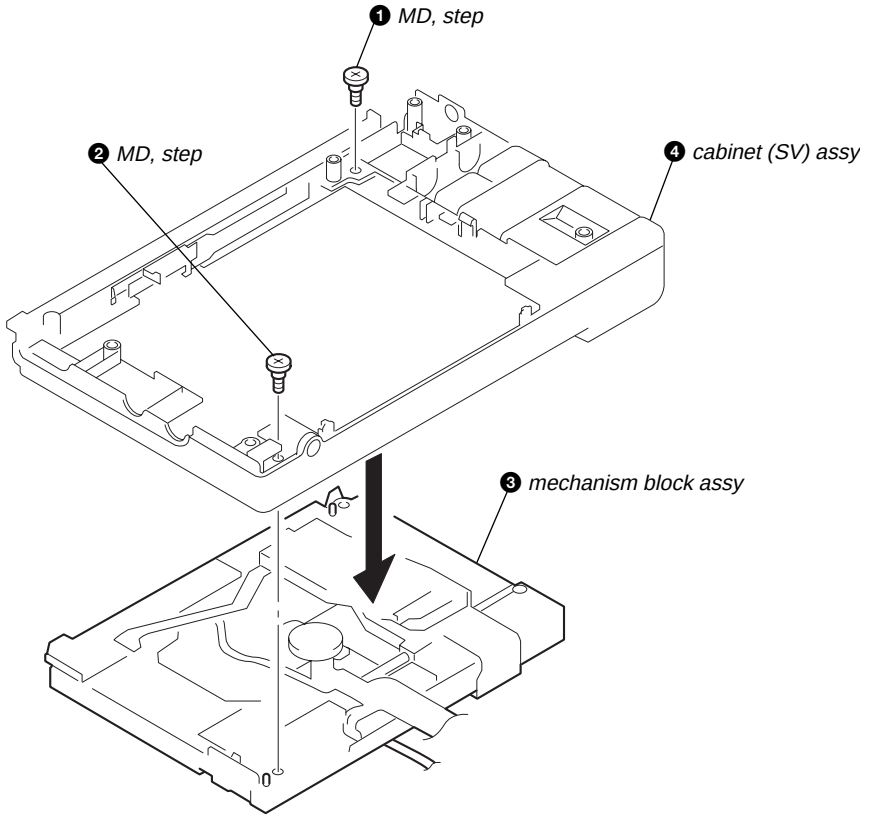
3-5. MAIN BOARD



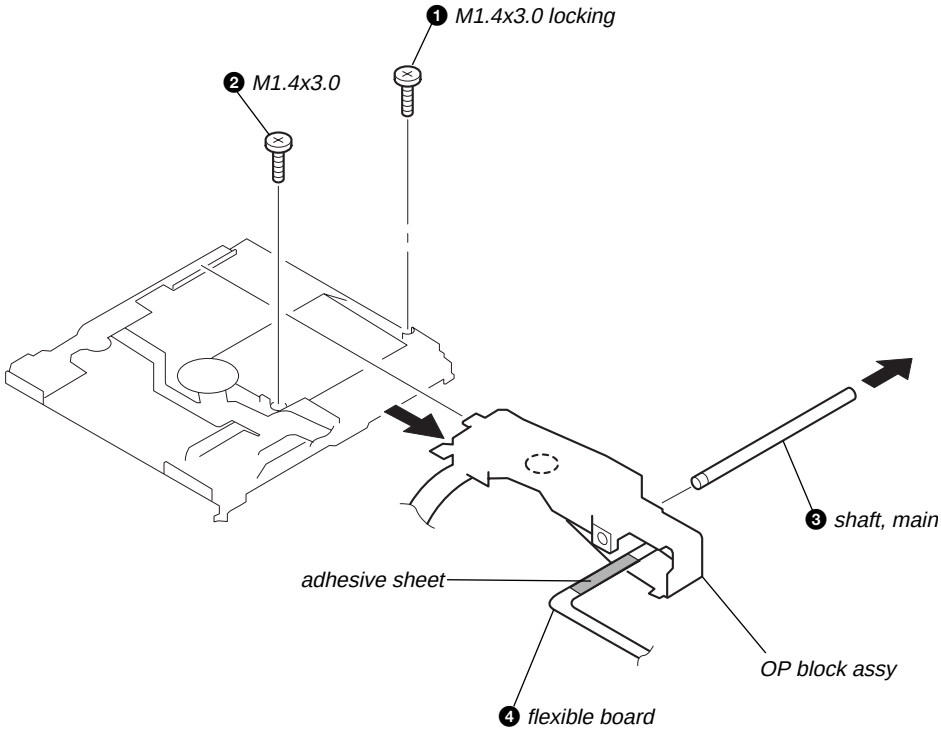
3-6. PANEL (SV) ASSY, UPPER



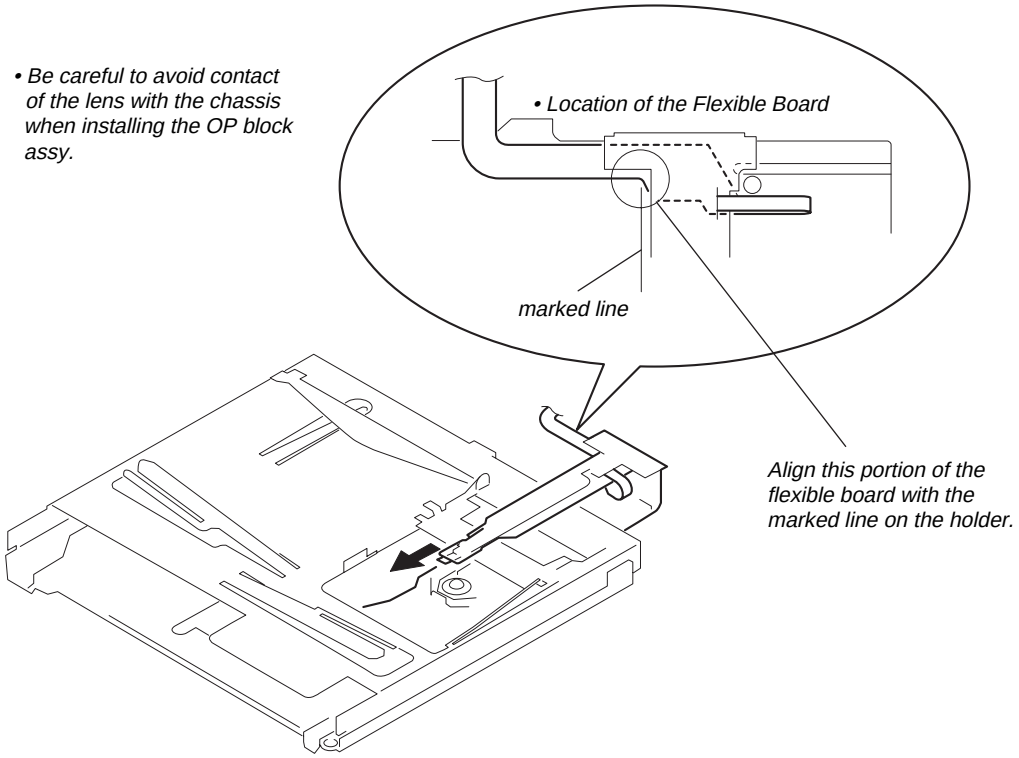
3-7. CABINET (SV) ASSY



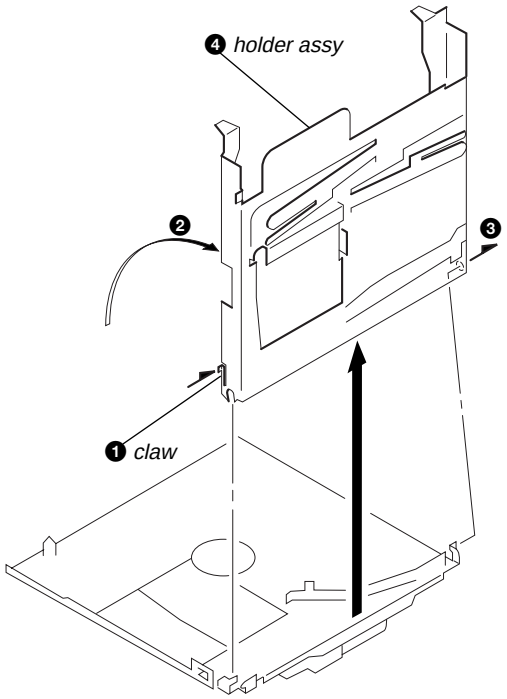
3-8. OP BLOCK ASSY



• Notes for Installation of the OP Block Assy


• Be careful to avoid contact of the lens with the chassis when installing the OP block assy.
• Location of the Flexible Board
marked line
Align this portion of the flexible board with the marked line on the holder.

3-9. HOLDER ASSY



SECTION 4
TEST MODE

4-1. GENERAL

This set provides the Overall adjustment mode (Assy mode) that allows CD and MO disk to be automatically adjusted when in the test mode. In this Assy mode, the system discriminates between CD and MO disk and then automatically perform adjustments for them in sequence. If a fault is found, the system displays its location. Also, the Servo mode allows each individual adjustment to be automatically adjusted.

4-2. TEST MODE SETTING

See page 5.

4-3. TEST MODE STRUCTURE

Test mode

- ▶▶I or VOLUME + key → Manual Mode
- VOLUME + key → Servo Mode / Audio Mode / Mechanism Mode / Power Mode
- I◀◀ or VOLUME − key → Overall Adjustment Mode (Assy Mode)
- MODE key → Hybrid Mode (ALL Mode)
- EDIT/ENTER key → Key Check Mode

4-4. MANUAL MODE

(1) Servo Mode

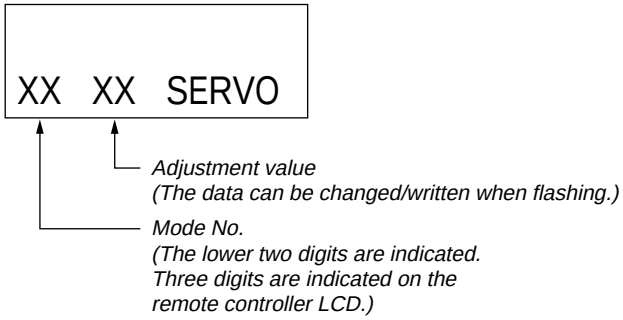
• How to Transfer in the Servo Mode:

Mode No.	Test Description	Check	Write
000	Servo mode		
010	Offset correction value indication		
011	VC offset correction		
012	Focus bias correction		
013	FE offset correction		
014	ABCD offset correction		
015	All servo ON		
016	Temperature indication		
020	Laser power adjustment		
021	Laser CD/MO read adjustment		○ (08)
022	Laser MO write adjustment		○ (4C)
023	Sled normal		○ (45)
024	Sled intermittent		○ (65)
025	Sled access		○ (30)
030	MO test adjustment		
031	MO focus search adjustment		
032	MO read EF balance adjustment		○ (0F)
033	MO read ABCD level		○ (07)
034	MO write EF balance adjustment		○ (10)
035	MO write ABCD level		○ (18)
036	Laser MO read adjustment		○ (08)
037	MO focus gain		○ (30)
038	MO tracking gain		○ (30)
039	MO focus bias	○	○ (0B)
040	Low reflection CD test adjustment		
041	Low reflection CD focus search adjustment		
042	Low reflection CD EF balance adjustment		○ (10)
043	Low reflection CD ABCD level		○ (06)
044	Laser low reflection CD read		○ (08)
045	Low reflection CD focus gain		○ (30)
046	Low reflection CD tracking gain		○ (30)
047	Low reflection CD focus bias	○	○ (00)
050	CD test adjustment		
051	CD focus search adjustment		
052	CD EF balance adjustment		○ (10)
053	CD ABCD level adjustment		○ (15)
054	Laser CD read		○ (08)
055	CD focus gain		○ (30)
056	CD tracking gain		○ (30)
057	CD focus bias	○	○ (00)
060	Recording test		
061	32 cluster full recording		
062	Recording shock		
063	32 cluster full playback		

Check : Mode to display error rate and cluster.
Write : Mode to permit adjustment (Default value given in parentheses).

1. Go into the test mode.
2. Press ▶▶I or VOLUME + key to set the servo mode.

Unit LCD display


XX XX SERVO
Adjustment value
(The data can be changed/written when flashing.)
Mode No.
(The lower two digits are indicated.
Three digits are indicated on the
remote controller LCD.)

3. Press the keys below to change the mode No.

▶ : Increases the one place.
■ : Sets the one place to 0.
This key brings the ten place to 0 if the one place is 0.

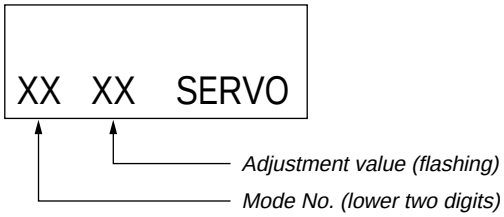
VOLUME + : Increases the ten place by 10 if the one place is 0. Increases the adjustment value if the one place is non-zero.

VOLUME − : Decreases the ten place by 10 if the one place is 0. Decreases the adjustment value if the one place is non-zero.

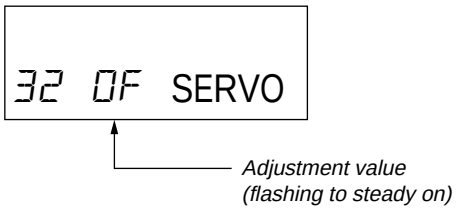
Note) Press the REC ⟶ key is the mode "33" to shift to the mode "34".
Press the ▶ key is the mode "34" to shift to the mode "35".

• How to Adjust in Servo Mode:

1. When the servo mode is set to the appropriate mode for each adjustment, the lower two digits of the mode No. and the value stored in EEPROM are displayed and flashing.



2. To perform automatic adjustment for an adjustment item with the mode number 030 to 047, press ▮▮ key.
   If the result of adjustment is OK, the adjustment value changes from flashing to steady on and it is automatically written to EEPROM.

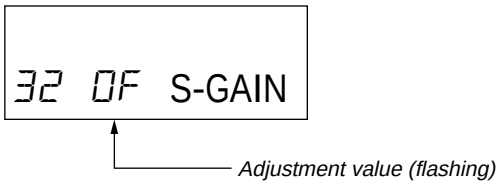


3. To perform manual adjustment, change the adjustment value with VOLUME + or − key, and press ▮▮ key to write it to EEPROM.

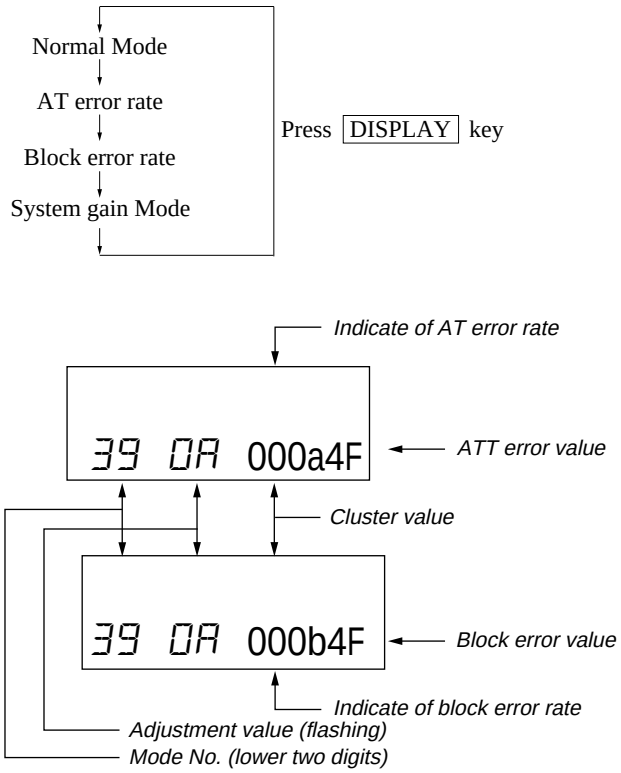
Note) Normally, automatic adjustment should be performed. Do not execute manual adjustment.

• System Gain Mode

1. This mode allows the system gain to be freely adjusted. Press DISPLAY key to enter this mode.



2. Increase or decrease the adjustment value with VOLUME + or − key.
3. Press DISPLAY or ■ key to return to the normal mode.
4. For the error rate display enabled:



Note) In normal service, do not adjust the system gain mode.

(2) Audio Mode

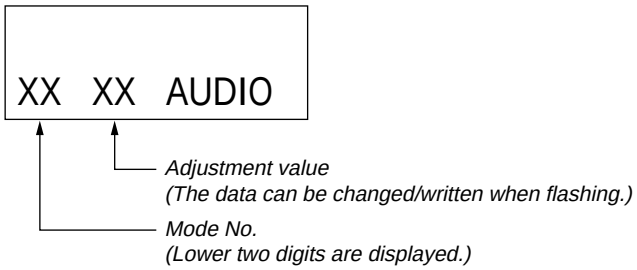
• How to Transfer in the Audio Mode

Mode No.	Test Description	Write	Change Description
100	Audio mode		
110	Audio playback		
111	L/R=1 kHz 0 dB	Playback VOL	HP output
112	L=1 kHz 0 dB	Playback VOL	HP output
113	R=1 kHz 0 dB	Playback VOL	HP output
114	L/R – ∞ dB	Playback VOL	HP output
115	L/R=1 kHz 0 dB & EVR max	Playback VOL	HP output
116	L/R=1 kHz 0 dB & AVLS on	Playback VOL	HP output
117	INFI ZERO & BEEP	Playback VOL	HP output
120	Audio recording test		
121 *1)	LINE manual recording	Recording VOL	HP output
	MIC manual recording		
122 *1)	DEMP LINE manual recording	Recording VOL	HP output
	DEMP MIC manual recording		
123 *1)	LINE automatic recording	HP VOL	HP output
	OPT automatic recording		
	MIC automatic recording		
124 *1)	DEMP LINE automatic recording	HP VOL	HP output
	DEMP OPT automatic recording		
	DEMP MIC automatic recording		
130	DIGITAL AGC ADJ1		
131	MIC UP SR	○ (30)	
132	MIC DOWN SR	○ (FA)	
133	MIC THD0	○ (D0)	
134	MIC GAIN	○ (00)	
135	MIC ATTACK	○ (A0)	
136	MIC RECOVER	○ (F8)	
137	MIC THD2	○ (F0)	
138	MIC GAIN2	○ (D0)	
139	MIC RTIME	○ (01)	
140	DIGITAL AGC ADJ2		
141	LINE UP SR	○ (17)	
142	LINE DOWN SR	○ (FF)	
143	LINE THD0	○ (D0)	
144	LINE GAIN	○ (0C)	
145	LINE ATTACK	○ (33)	
146	LINE RECOVER	○ (FB)	
147	LINE THD2	○ (E4)	
148	LINE GAIN2	○ (5F)	
149	LINE RTIME	○ (04)	
150	DIGITAL AGC ADJ3		
151	MAN UP SR	○ (C0)	
152	MAN DOWN SR	○ (40)	
153	AUTO THD3	○ (51)	
154	AUTO LMT UP SR	○ (FF)	
155	AUTO LMT DOWN SR	○ (E0)	
156	MAN THD3	○ (51)	
157	MANU LMT UP SR	○ (FF)	
158	MANU LMT DOWN SR	○ (A0)	
159	THD1	○ (1A)	

*1) The port is detected and the input is automatically selected.
Contents changed : Contents to be changed when VOLUME + or − key is pressed.
Write : Mode to permit adjustment
(Default value given in parentheses)

1. Go into the test mode.
2. Press ▶▶| key or VOLUME + key and VOLUME + key in this turn to set the audio mode.

Unit LCD display



3. Press the keys below to change the mode number.
   ► : Increases the one place.
   ■ : Sets the one place to 0.
   This key brings the ten place to 0 if the one place is 0.

VOLUME [+] : Increases the ten place by 10 if the one place is 0. Increases the adjustment value if the one place is non-zero.
VOLUME [–] : Decreases the ten place by 10 if the one place is 0. Decreases the adjustment value if the one place is non-zero.

• How to Adjust in the Audio Mode

1. When the audio mode is set to the appropriate mode for each adjustment, the lower tow digits of the mode No. and the value stored in EEPROM are displayed and flashing.
2. Change the adjustment value with VOLUME [+] or [–] key and press [❚❚] key to write the new value to EEPROM.

• How to Check in the Audio Mode

The audio mode allows the checks below to be performed:

1. For the mode numbers of 111 to 113, 115 and 116, pressing [❚❚] key will activate a beep. But for the mode number of 117, pressing [❚❚] key will not activate a beep. (No beep sounds when [HOLD] switch is put on.)
2. For the mode numbers of 121 to 124, pressing [Digital MEGA BASS] key will display the DBB mode for the adjustment value.
   1 : Mode 1
   2 : Mode 2
   13 : OFF
   (This will not be accepted when the LINE OUT jack is plugged. The display will be 13 : OFF when LINE OUT jack is plugged in Modes 1 and 2.)

(3) Mechanism Mode

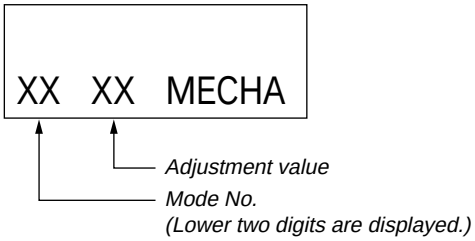
• How to Transfer the Mode in the Mechanism Mode:

Mode No.	Test Description	Operation
200	FUNCTION	Stepper control
210	MECHA test	Initial position return
211	HEAD adjustment	Operation variation changing (19)
212	REC position	Recording head descent
220	RESUME	Resume
221	RESUME CLEAR	Resume clear/initialization

( ) : Default value

1. Go into the test mode.
2. Press [►►I] or VOLUME [+] and VOLUME [+] and VOLUME [+] in this turn to set the mechanism mode.

Unit LCD display



3. Press the keys below to change the mode No.
   ► : Increases the one place.
   ■ : Sets the one place to 0.
   This key brings the ten place to 0 if the one place is 0.

VOLUME [+] : Increases the ten place by 10 if the one place is 0. Increases the adjustment value if the one place is non-zero.
VOLUME [–] : Decreases the ten place by 10 if the one place is 0. Decreases the adjustment value if the one place is non-zero.

• How to Check in the Mechanism Mode

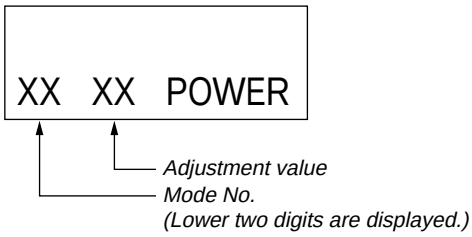
The mechanism mode allows the checks below to be performed:

1. For the mode numbers of 200, 210 to 212, 220 and 221, pressing [I◄◄] key will move the optical pickup to the inner radius. Pressing [►►I] key will move the pickup to the outer radius.
2. For the mode numbers of 211 and 212, pressing [❚❚] key will start aging. Pressing [■] key will stop aging.
   • Mode No. 211 ... Sled aging with stepper at playback position.
   • Mode No. 212 ... Sled aging with stepper at recording position.
3. With the mode number 210 selected, pressing [❚❚] key will start aging with steeper at between home and recording positions. [■] key will stop aging.

(4) Power Mode

Mode No.	Test Description	Indication value	Remark
300	POWER test		
310	POWER SUPPLY		
311	DC IN	+B voltage value	
320	CHG TEST		
321	Charging start		
322	BATT under	CHGMNT voltage value	
323	BATT under	+B CHGMNT voltage value	

1. Go into the test mode.
2. Press ▶▶| key or VOLUME + and VOLUME + and VOLUME + and VOLUME + in this turn to set the power mode.



3. Press the keys below to change the mode No.

▶ : Increases the one place.
■ : Sets the one place to 0.
This key brings the ten place to 0 if the one place is 0.
VOLUME + : Increases the ten place by 10 if the one place is 0.
Increases the adjustment value if the one place is non-zero.
VOLUME – : Decreases the ten place by 10 if the one place is 0.
Decreases the adjustment value if the one place is non-zero.

Note) With the mode number 310 selected, pressing ▶ key will transfer to the mode number (311) for the currently operating power.
With the mode number 300 selected, pressing ❚❚ key will set the sleep mode. Pressing ■ key will release it.

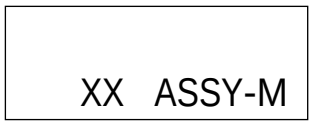
• How to Check in the Power Mode

1. For the mode numbers of 311, the voltage of the currently operating power is displayed.

4-5. OVERALL ADJUSTMENT MODE (ASSY MODE)

• How to Adjust in Assy Mode

1. Go into the test mode.
2. Press |◀◀ or VOLUME – key.

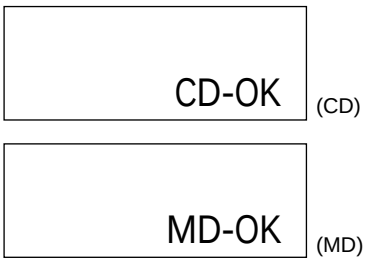


3. Insert the test CD (TDYS-1) or an available SONY CD.
4. Press ▶ key. The system discriminates between CD and MO and performs automatic adjustment for CD.

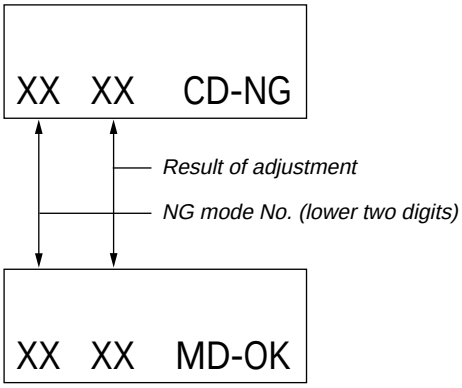
• CD Automatic Adjustment

Mode No.	Adjustment Description
052	CD EF balance adjustment
053	CD ABCD level adjustment
055	CD focus gain
056	CD tracking gain
057	CD focus bias

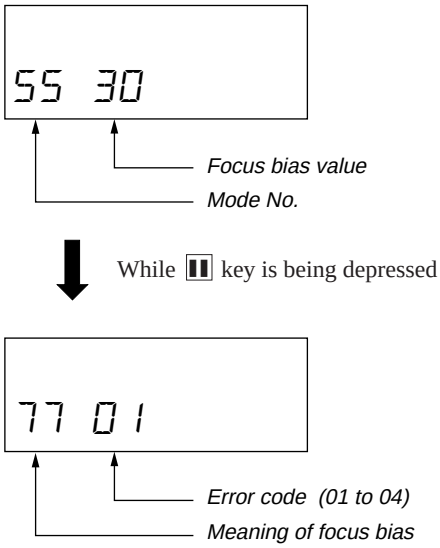
5. If the result of automatic adjustment is OK, the following display appears:



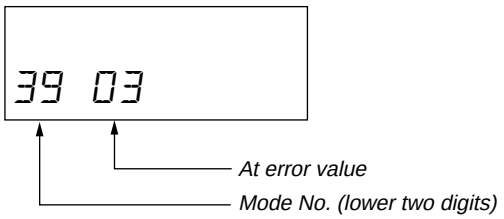
6. If the result of automatic adjustment is NG, the following display appears:



* For the mode numbers of 039 and 057, if the focus bias value is NG, the following display is repeated:

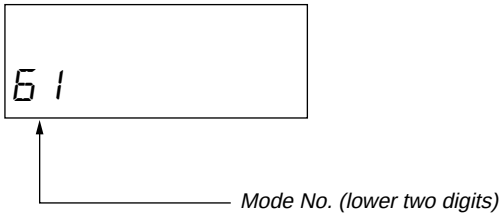


* For the mode numbers of 039 and 061, if the At error rate is NG, the following display is repeated:



7. If NG, set the servo mode. Perform automatic adjustment for the items not accepted (see the servo mode).

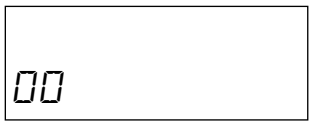
8. Insert a MO disk.
9. Press ► key. The system discriminates between CD and MO and performs automatic adjustment for the MO disk.



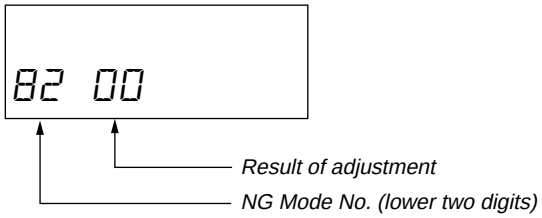
• MO Automatic Adjustment

Mode No.	Adjustment Description
032	MO read EF balance adjustment
033	MO read ABCD level
034	MO write EF balance adjustment
035	MO write ABCD level
037	MO focus gain
038	MO tracking gain
061	32 cluster full recording
062	Recording shock
063	32 cluster full playback
039	MO focus bias
042	Low refrection CD EF balance adjustment
043	Low refrection CD ABCD level
044	Laser low reflection CD read
046	Low refrection CD tracking gain

10. If the result of automatic adjustment is OK, the following display appears:



11. If the result of automatic adjustment is NG, the following display appears:



12. If NG, set the servo mode. Perform automatic adjustment for the items not accepted (see the servo mode).

4-6. HYBRID MODE, KEY CHECK MODE

These modes are not used in normal service.

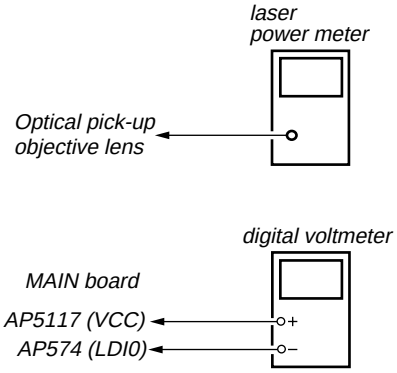
SECTION 5
ELECTRICAL ADJUSTMENTS

PRECAUTIONS FOR ADJUSTMENT

1) Perform all adjustments in the order given in the test mode. After adjusting, exit the test mode.
2) Use the following tools and measuring instruments.
   - Test CD TDYS-1 (Part No. : 4-963-646-01)
   - Recorded MO disk PTDM-1 (Part No. : J-2501-054-A)
   - Laser power meter LPM-8001 (Part No. : J-2501-046-A)
   - Oscilloscope (Frequency band above 40 MHz. Perform the calibration of probe first before measuring.)
   - Digital voltmeter
3) Unless specified othewise, supply DC 4.5V from the DC IN 4.5V jack.
4) Swtich, knob positions
   HOLD switch ..... OFF
   AVLS switch ..... NORM

LASER POWER CHECK

Connection :



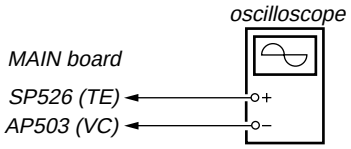
Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the laser power adjustment mode (Mode : 020) using the VOLUME + or – key.
3. Press the ⏮ key and move the optical pick-up to the inner most circumference.
4. Open the cover and set the laser power meter on the objective lens of the optical pick-up.
5. Press the ► key, and set the laser CD/MO read adjustment mode (Mode : 021).
6. Check that the laser power meter reading is 0.85 ± 0.085 mW.
7. Check that the voltage between AP5117 (VCC) and AP574 (LDI0) at this time is below 40 mV.
8. Press the ► key, and set the laser MO write adjustment mode (Mode : 022).
9. Check that the laser power meter reading is 6.8 ± 0.68 mW.
10. Press the ❚❚ key to finalize the adjustment data.
11. Check that the voltage between AP5117 (VCC) and AP574 (LDI0) at this time is below 80 mV.
12. Press the ■ key.
13. Exit the test mode.

Adjustment Location : See page 19.

MO TRAVERSE ADJUSTMENT

Connection :



Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the MO test adjustment mode (Mode : 030) using the VOLUME + or – key.
3. Press the ⏮ or ⏭ key and move the optical pick-up to the center circumference.
4. Insert any MO disk available on the market.
5. When the ► key is pressed, the MO read EF balance adjustment mode (Mode : 032) will be set after MO focus search adjustment mode (Mode : 031).
6. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.
7. Slide the REC key and set the MO write EF balance adjust ment mode (Mode : 034).
8. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

(Traverse waveform)

Specification : A = B, C ≧1.0 Vp-p

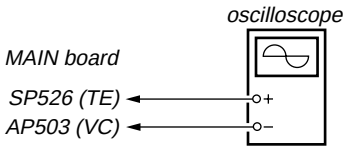
9. Check that the traverse level at this time is above 1.0 Vp-p.
10. Press the ■ key.
11. Exit the test mode.

Note) Using a recorded disk in this adjustment will erase the data.

Adjustment Location : See page 19.

LOW REFLECTION CD TRAVERSE ADJUSTMENT

Connection :



Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the low reflection CD test adjustment mode (Mode : 040) using the VOLUME + or – key.
3. Insert any MO disk available on the market.
4. When the ► key is pressed, the low reflection CD EF balance adjustment mode (Mode : 042) will be set after low reflection CD focus search adjustment mode (Mode : 041).
5. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

(Traverse waveform)

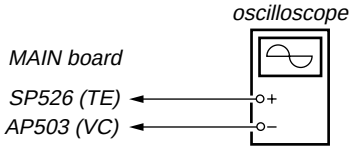
Specification : A = B, C ≧0.9 Vp-p

6. Check that the traverse level at this time is above 0.9 Vp-p.
7. Press the ■ key.
8. Exit the test mode.

Adjustment Location : See page 19.

CD TRAVERSE ADJUSTMENT

Connection :



Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the CD test adjustment mode (Mode : 050) using the VOLUME + or – key.
3. Press the |◄◄ or ►►| key and move the optical pick-up to the center circumference.
4. Insert a test CD (TDYS-1).
5. When the ► key is pressed, the CD EF balance adjustment mode (Mode : 052) will be set after CD focus search adjustment mode (Mode : 051).
6. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

(Traverse waveform)

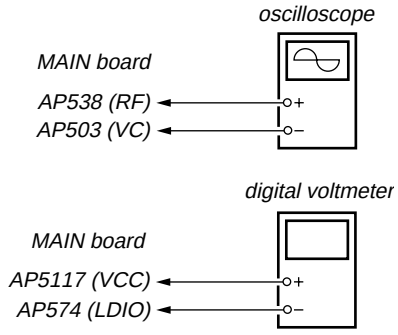
Specification : A = B, C ≧1.0 Vp-p

7. Check that the traverse level at this time is above 1.0 Vp-p.
8. Press the ■ key.
9. Exit the test mode.

Adjustment Location : See page 19.

CD RF LEVEL CHECK

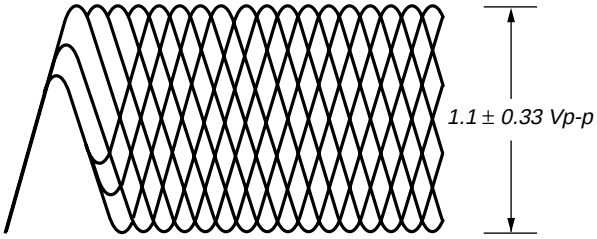
Connection :



Adjustment Method :

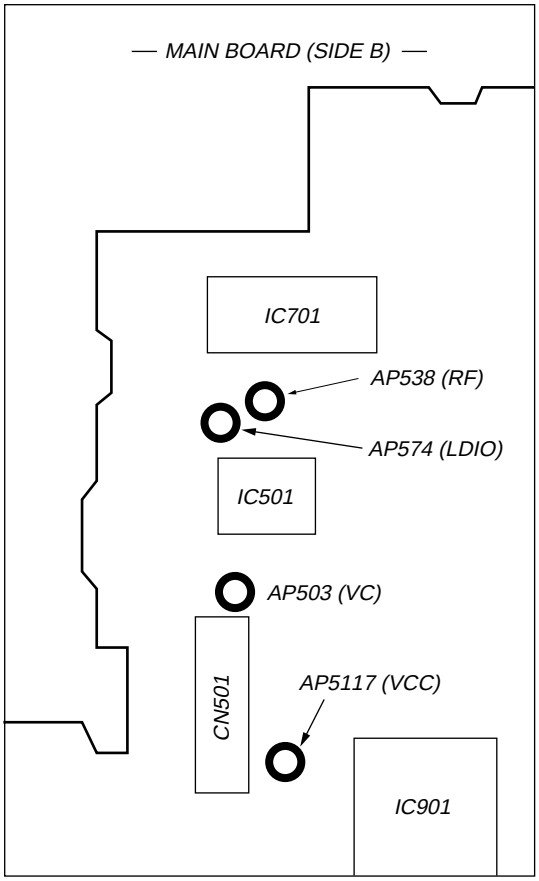
1. Set the servo mode of the test mode (Mode : 000).
2. Press the [►] key, and set the CD test adjustment mode (Mode : 050) using the VOLUME [+] or [–] key.
3. Press the [|◄◄] or [►►|] key and move the optical pick-up to the center circumference.
4. Insert a test CD (TDYS-1).
5. When the [►] key is pressed, the CD EF balance adjustment mode (Mode : 052) will be set after CD focus search adjustment mode (Mode : 051).
6. When the [►] key is pressed, the CD ABCD level adjustment mode (Mode : 053) is set.
7. Press the [II] key to perform automatic adjustment, and check that the RF level is 1.1 ± 0.33 Vp-p.

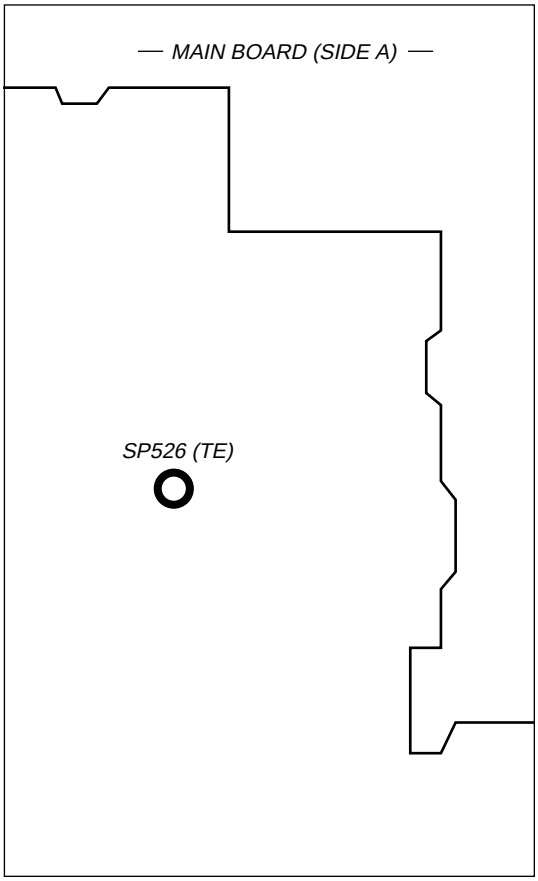
(RF waveform)



8. Check that the voltage between AP5117 (VCC) and AP574 (LDIO) and at this time is below 40 mV.
9. Press the [■] key.
10. Exit the test mode.

Adjustment Location :





SECTION 6
DIAGRAMS

6-1. IC PIN DESCRIPTIONS

• IC601 CXD2652AR (DIGITAL SERVO, ENC/DEC & ATRAC MEMORY CONTROLLER)

Pin No.	Pin name	I/O	Pin Description
1	MNT 0	O	Traverse count signal output.
2	MNT 1	O	Track jump detect output.
3	MNT 2	—	Not used (Open).
4	MNT 3	O	Focus OK signal output.
5	SWDT	I	Inputs write data signal from system control (IC801).
6	SCLK	I	Inputs serial clock signal from system control (IC801).
7	XLAT	I	Inputs serial latch signal from system control (IC801).
8	SRDT	O	Outputs write data signal to system control (IC801).
9	SENS	O	Outputs internal status (SENS) to system control (IC801).
10	XRST	I	Inputs reset signal from system control (IC801). L : Reset
11	SQSY	O	Output subcode Q sync (SCOR) to system control (IC801). Outputs “L” every 13.3 msec. Outputs “H” at all most mostly.
12	DQSY	O	Outputs digital-in U-bit CD format subcode Q sync (SCOR) to system control (IC801). Outputs “L” every 13.3 msec. Outputs “H” at all most mostly.
13	WRPWR	I	Inputs laser power switching signal from system control (IC801).
14	NC	—	Not used (Open).
15	TX	I	Input of write data taransmission timing from system control (IC801). Also used as magnetic field head ON/OFF output.
16	OSC1	O	Clock output (22.5 MHz).
17	OSC0	I	Clock input (22.5 MHz).
18	XTSL	—	Not used (Fixed at “L”)
19	NC	—	Not used (Connect to ground).
20	RVSS	—	Connect to ground.
21	DIN	I	Digital audio signal input pin (For optical input).
22	NC	—	Not used (Open).
23	ADDT	I	Audio data input from A/D converter (IC301).
24	DATA	O	Monitor/decode audio data output to A/D converter (IC301).
25	ALRCK	O	L/R clock output to D/A converter (IC301).
26	ABCK	O	Bit clock signal output to A/D, D/A converter (IC301).
27	FS256	O	11.2896 MHz clock output (MCLK).
28	DV_{DD}	—	Power supply (+2.8 V) for digital.
29 – 39	A00 – A08, A10, A11	O	Address signal output to DRAM (IC602).
40	DVSS	—	Ground terminal.
41	XOE	O	Output enable contol signal output to DRAM (IC602).
42	XCAS	O	Column address strobe singal output to DRAM (IC602).
43	A09	O	Address signal output to DRAM (IC602).
44	XRAS	O	Row address strobe signal output to DRAM (IC602).
45	XWE	O	Read/write control signal output to DRAM (IC602).
46 – 49	D0 – D3	I	Data signal input from DRAM (IC602).
50	MVCI	—	Not used (Connect to ground).
51	ASYO	O	Playback EFM full-swing output (L : VSS, H : VDD).
52	ASYI	I	Playback EFM asymmetry comparate voltage input.
53	AVDD	—	Power supply (+2.8 V) for analog.
54	BIAS	I	Playback EFM asymmetry circuit constant current input.
55	RFI	I	Inputs playback EFM RF signal from RF amplifier (IC501).

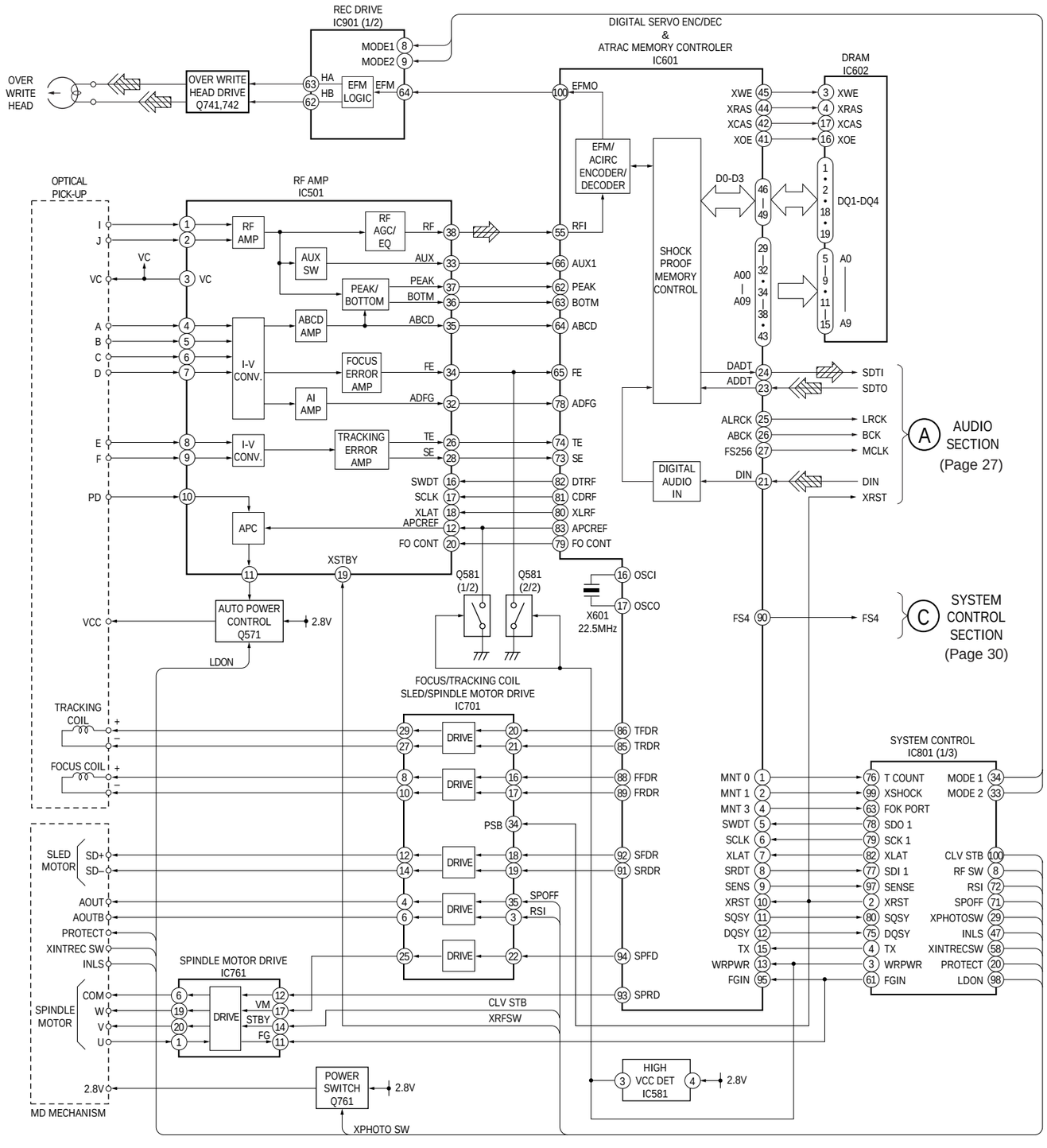
Pin No.	Pin name	I/O	Pin Description
56	AVSS	—	Ground terminal.
57	PDO	—	Not used (Open).
58	PCO	O	Decoder PLL master clock PLL phase comparison output.
59	FILI	I	Decoder PLL master clock PLL filter input.
60	FILO	O	Decoder PLL master clock PLL filter output.
61	CLTV	I	Decoder PLL master clock PLL VCO control voltage input.
62	PEAK	I	Inputs peak hold signal for light amount signal from RF amplifier (IC501).
63	BOTM	I	Inputs bottom hold signal for light amount signal from RF amplifier (IC501).
64	ABCD	I	Light amount signal from RF amplifier (IC501).
65	FE	I	Input focus error signal from RF amplifier (IC501).
66	AUX1	I	Input of auxiliary signal from RF amplifier (IC501).
67	VC	I	Input of middle point voltage (+1.4 V) from RF amplifier (IC501).
68	ADIO	—	Not used (Open).
69	AVDD	—	Power supply (+2.8 V) for analog.
70	ADRT	—	Not used (Connect to +2.8 V).
71	ADRB	—	Not used (Connect to ground).
72	AVSS	—	Ground terminal.
73	SE	I	Input of sled error signal from RF amplifier (IC501).
74	TE	I	Input of tracking error signal from RF amplifier (IC501).
75	AUX2	—	Not used (Connect to +2.8 V).
76	DCHG	—	Not used (Connect to +2.8 V).
77	APC	—	Not used (Connect to +2.8 V).
78	ADFG	I	Input of ADIP dual FM signal from RF amplifier (IC501) (22.05 kHz ± 1 kHz). (TTL Schmit input)
79	FO CONT	O	Focus control output to RF amplifier (IC501).
80	XLRF	I	Latch signal input from RF amplifier (IC501).
81	CKRF	O	RFCK clock (7.35 kHz) signal output.
82	DTRF	I	Serial data input from RF amplifier (IC501).
83	APCREF	I	Laser power setting signal input.
84	LDDR	—	Not used (Open).
85	TRDR	O	Tracking servo drive signal output (–).
86	TFDR	O	Tracking servo drive signal output (+).
87	DVDD	—	Power supply (+2.8 V) for digital.
88	FFDR	O	Focus servo drive signal output (+).
89	FRDR	O	Focus servo drive signal output (–).
90	FS4	O	176.4 kHz clock signal output (MCLK).
91	SRDR	O	Sled servo drive signal output (–).
92	SFDR	O	Sled servo drive signal output (+).
93	SPRD	O	Spindle servo drive signal output (–).
94	SPFD	O	Spindle servo drive signal output (+).
95	FGIN	I	FG signal input from spindle motor driver (IC761).
96	TEST1	—	Not used (Connect to ground).
97	TEST2	—	Not used (Connect to ground).
98	TEST3	—	Not used (Connect to ground).
99	DVSS	—	Ground terminal.
100	EFMO	O	EFM recording signal output.

• IC801 CXP740010 (SYSTEM CONTROL)

Pin No.	Pin name	I/O	Pin Description
1	CLKCS	O	Not used (Chip select output to real time clock).
2	XRST	O	Reset output. L : Reset
3	WRPWR	O	Laser power switching signal output.
4	TX	O	Write data transfer timing output.
5	SDI2	I	Serial data input.
6	SDO2	O	Serial data output.
7	SCK2	O	Serial clock output.
8	RFSW	O	Power control output.
9	SSB	I/O	SSB data signal input and output.
10	SSB SCK	I/O	SSB clock signal input and output. (Not used (Open).)
11	DTCK	I/O	Remote control data signal input/output.
12	SPCK	—	Not used (Open).
13	WP	I	Wake-up signal input from remote control key and this unit key.
14	OPEN	I	Detecting switch for opening and closing of the upper cover. L : Close
15	CLOCK	I	Not used (CLOCK SET switch input).
16	NI MH CHG	O	NI MH charge control output.
17	SLEEP	O	Sleep signal output.
18	T.MARK	I	T.MARK (Track mark) switch input.
19	REC	I	Not used (REC switch input).
20	PROTECT	I	Disc write protect switch. H : Protect
21	HOLD	I	HOLD switch input (This unit). L : HOLD
22	SYNC REC	I	SYNCHRO REC switch input.
23	D. B. B	I	DIGITAL MEGA BASS slide switch input.
24	XLINEDET	I	LINE IN (OPTICAL) detection input. L : LINE IN
25	INMU1	O	INMU signal output.
26	XTEST	I	Test mode terminal. L : Test mode
27	XDCIN	I	Not used (Open). (DC input detect. L : DC IN)
28	KANA SE L	—	Not used (Open).
29	XPHOTO SW	O	ON/OFF control signal output of PHOTO circuit.
30	XP CONT	—	Not used (Open). (Power control output. L : ON)
31	X2VCONT	—	Not used (Open). (Outputs H while operating with a lithium battery. 2V power control signal output. L : ON)
32	XREC LED	—	Not used (Open). (REC LED control. L : ON)
33	MODE2	O	REC drive (IC901) control signal output.
34	MODE1	O	
35	XNIMH CHG	—	Not used (Open). (Battery charger control signal output. L : Charge)
36	XLCD ON	O	LCD ON/OFF control. L : ON
37	INMU0	O	INMU signal output.
38	MRST	I	Microprocessor reset input.
39	V_{SS}	—	Ground.
40	XTAL	—	System clock (12 MHz).
41	EXTAL	—	System clock (12 MHz).
42	LCD DS	O	LCD communication strobe signal output to LCD driver.
43	LCD XC D	O	Com/data select signal output.
44	LCD DATA	O	LCD data output.
45	LCD SCK	O	Serial clock output.
46	CHG MNT	I	Battery charge voltage minitor input.
47	INLS	I	Detecting switch for internal circuit of sleding. L : Internal circuit
48	HIDC MNT	I	Voltage monitor DC input.
49	KEY R	I	Remote control key input.

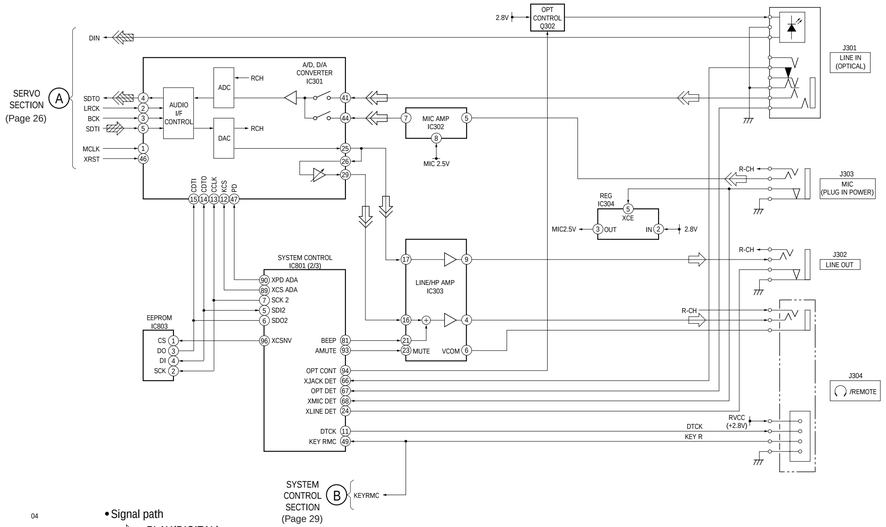
Pin No.	Pin name	I/O	Pin Description
50	AVSS	—	Ground terminal for A/D converter.
51	AVREF	I	A/D converter reference voltage input.
52	AVDD	—	A/D converter power supply terminal.
53	VLG2-MNT	I	DSP power monitor signal.
54	TEMP	I	Temp meter (IC802) input.
55	KEY3	I	Key input.
56	KEY2	I	Key input.
57	KEY1	I	Key input.
58	XINT REC SW	I	Recording head position detect input.
59	UNREG MNT	I	2.8 V voltage monitor input.
60	BAT VC	I	Battery detect signal input.
61	FG IN	I	FG input from motor driver (IC503).
62	NC	—	Not used (Open).
63	FOK PORT	I	Focus OK signal input.
64	——	—	Not used (Open).
65	LCD RESET	O	LCD reset signal output.
66	XJACKDET	I	LINE IN (OPTICAL) jack detection input.
67	OPT DET	I	LINE IN (OPTICAL) optical detection input.
68	XMIC DET	I	MIC (PLUG IN) jack detection.
69	(NC)	—	Not used (Open).
70	FSI (NC)	—	Not used (Open).
71	SPOFF	O	REC head motor control signal output.
72	RSI	O	
73	RH PWM	O	RH constant current control signal output.
74	(NC)	—	Not used (Open).
75	DQSY	I	Subcode Q sync (SCOR) of digital in U-bit CD format from IC601.
76	T COUNT	I	Traverse count signal input.
77	SDI1	I	Serial data input.
78	SDO1	O	Serial data output.
79	SCK1	O	Serial clock output.
80	SQSY	I	SUB-Q/ADIP SYNC input.
81	BEEP	O	BEEP sound output control.
82	XLAT	O	Latch output.
83	NC	—	Not used (Open).
84	TEX	—	Not used (Fixed at “L”).
85	TX	—	Not used (Fixed at “L”).
86	VSS	—	Ground.
87	VDD	—	Power supply pin (+2.8V).
88	NC	—	Not used (Fixed at “H”).
89	XCS ADA	O	A/D, D/A converter chip select output.
90	XPD ADA	O	A/D, D/A converter power down signal output. H : Power down
91	KEY ON	O	SLEEP : L, action : H.
92	XNIMH DET (NC)	—	Not used (Open). (Battery detect switch input.)
93	A MUTE	O	Analog mute control. H : Mute
94	XOPT CTL	O	Power supply control output for an optical input.
95	FFCLR	O	Flip flop clear signal output.
96	XCE NV	O	EEPROM chip select output.
97	SENS	I	SENS input.
98	LDON	O	“H” : APC circuit ON, “L” : APC circuit OFF
99	XSHOCK	I	Track jump detection input from IC601.
100	CLV STB	O	CLV drive control signal output.

6-2. BLOCK DIAGRAM — SERVO SECTION —

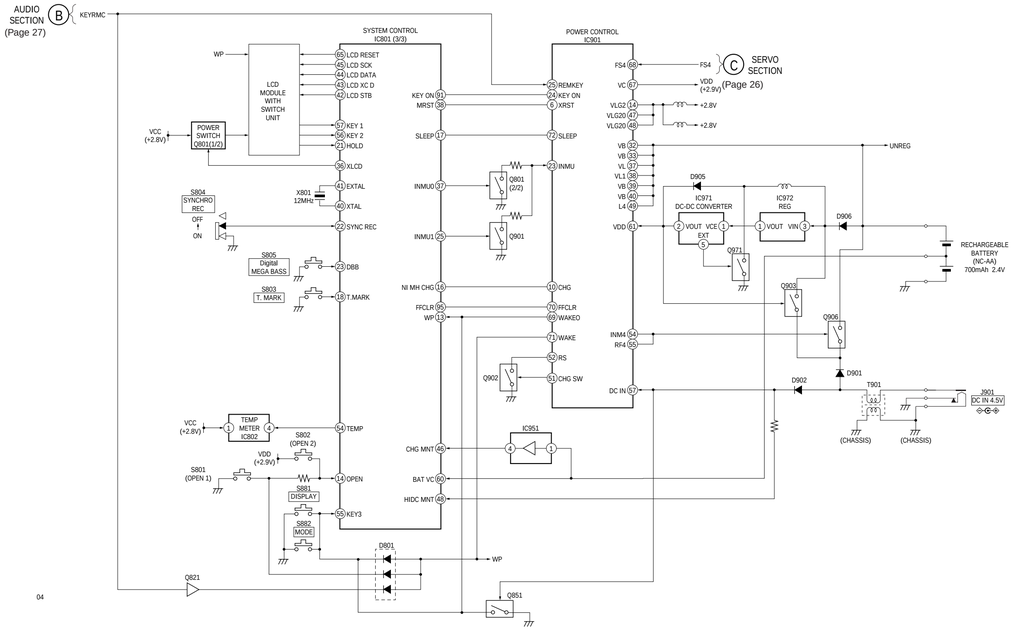


- Signal path
  : PLAY(DIGITAL)
  : REC(DIGITAL)
- R-ch : same as L-ch.

6-3. BLOCK DIAGRAM — AUDIO SECTION —



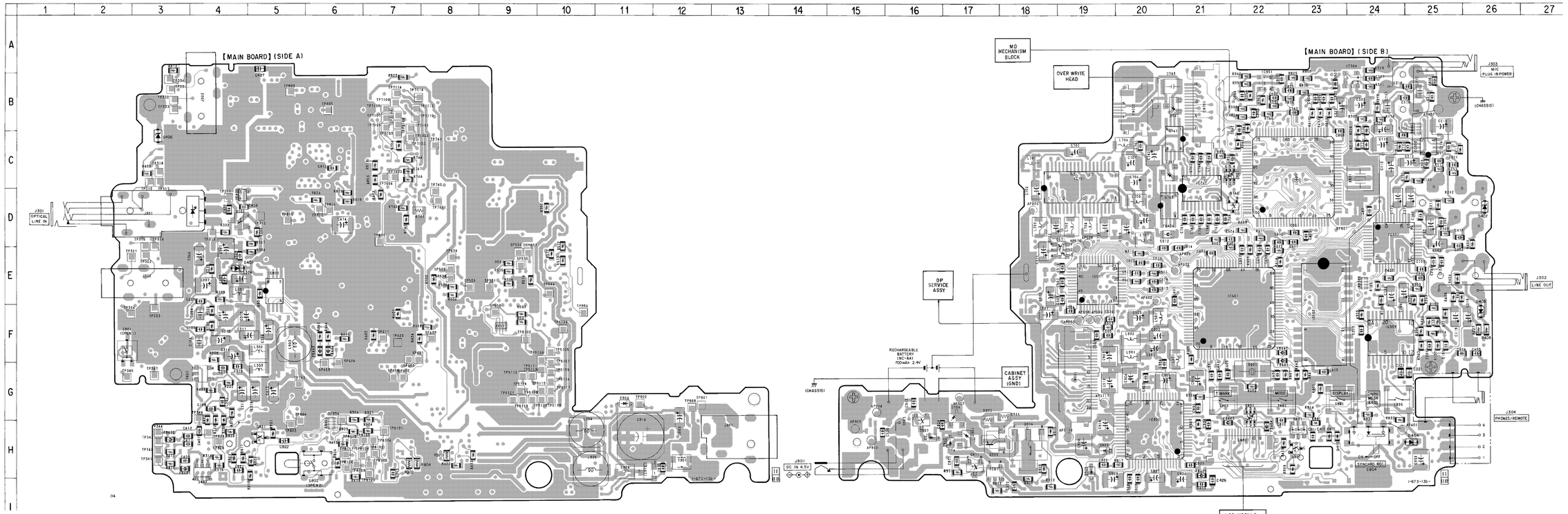
6-4. BLOCK DIAGRAM — SYSTEM CONTROL SECTION —



6-5. PRINTED WIRING BOARD

• **Semiconductor Location**

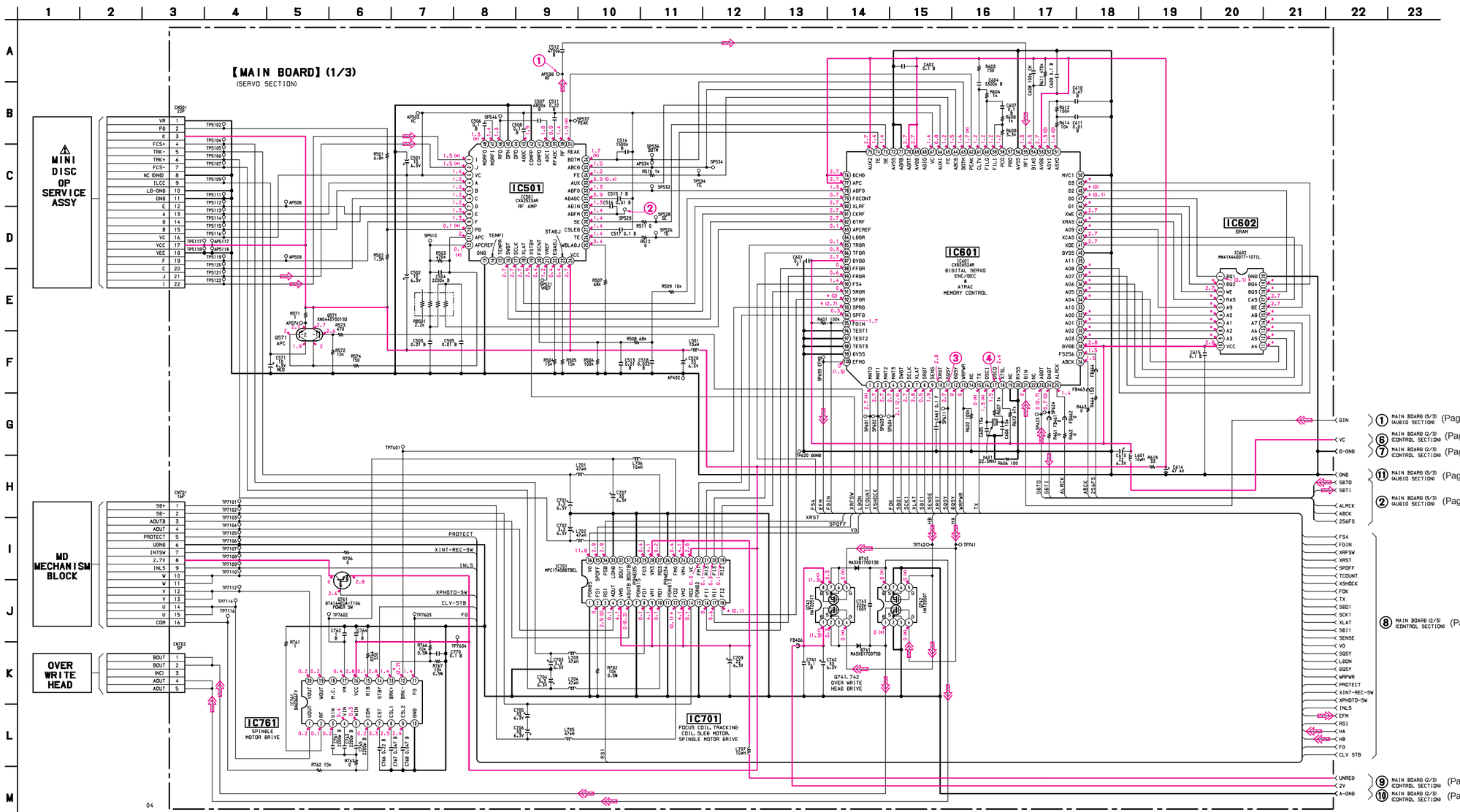
Ref. No.	Location
D401	E-4
D402	H-4
D403	G-3
D404	H-25
D406	C-3
D407	D-26
D408	F-26
D741	B-20
D742	C-20
D801	G-22
D901	H-17
D902	H-16
D903	H-19
D904	G-17
D905	H-19
D906	G-11
D907	H-16
IC301	D-24
IC302	C-25
IC303	F-24
IC304	A-23
IC501	E-19
IC601	E-21
IC602	F-23
IC701	C-19
IC761	C-21
IC801	C-22
IC802	D-4
IC803	E-5
IC901	G-20
IC951	B-22
IC971	H-17
IC972	H-11
J301	D-3
Q302	D-4
Q571	D-18
Q741	B-20
Q742	D-20
Q761	D-21
Q801	G-22
Q821	H-5
Q851	C-21
Q901	H-22
Q902	H-17
Q903	G-16
Q906	H-18
Q971	H-17



Note:
- ——— : parts extracted from the conductor side.
- ▨ : Pattern from the side which enables seeing. (The other layer's patterns are not indicated.)

Caution:
Pattern face side: (Side B) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A) Parts on the parts face side seen from the parts face are indicated.

6-6. SCHEMATIC DIAGRAM — MAIN SECTION (1/3) — • Refer to page 44 for IC Block Diagrams.



• **Waveforms**

1. VOLT/DIV : 0.5V AC
TIME/DIV : 1μsec
1.0±0.3Vp-p
IC501 (38)

2. VOLT/DIV : 0.1V AC
TIME/DIV : 0.1msec
Approx. 0.5Vp-p
IC501 (29)

3. VOLT/DIV : 1V AC
TIME/DIV : 5msec
2.8Vp-p
13.4msec
IC601 (11)

4. VOLT/DIV : 1V AC
TIME/DIV : 20nsec
2.6Vp-p
22.5MHz
IC601 (17)

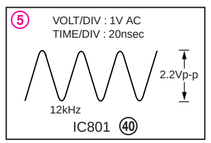
Note:
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
  ✻ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : PB (digital)
  ⇨ : REC (digital)

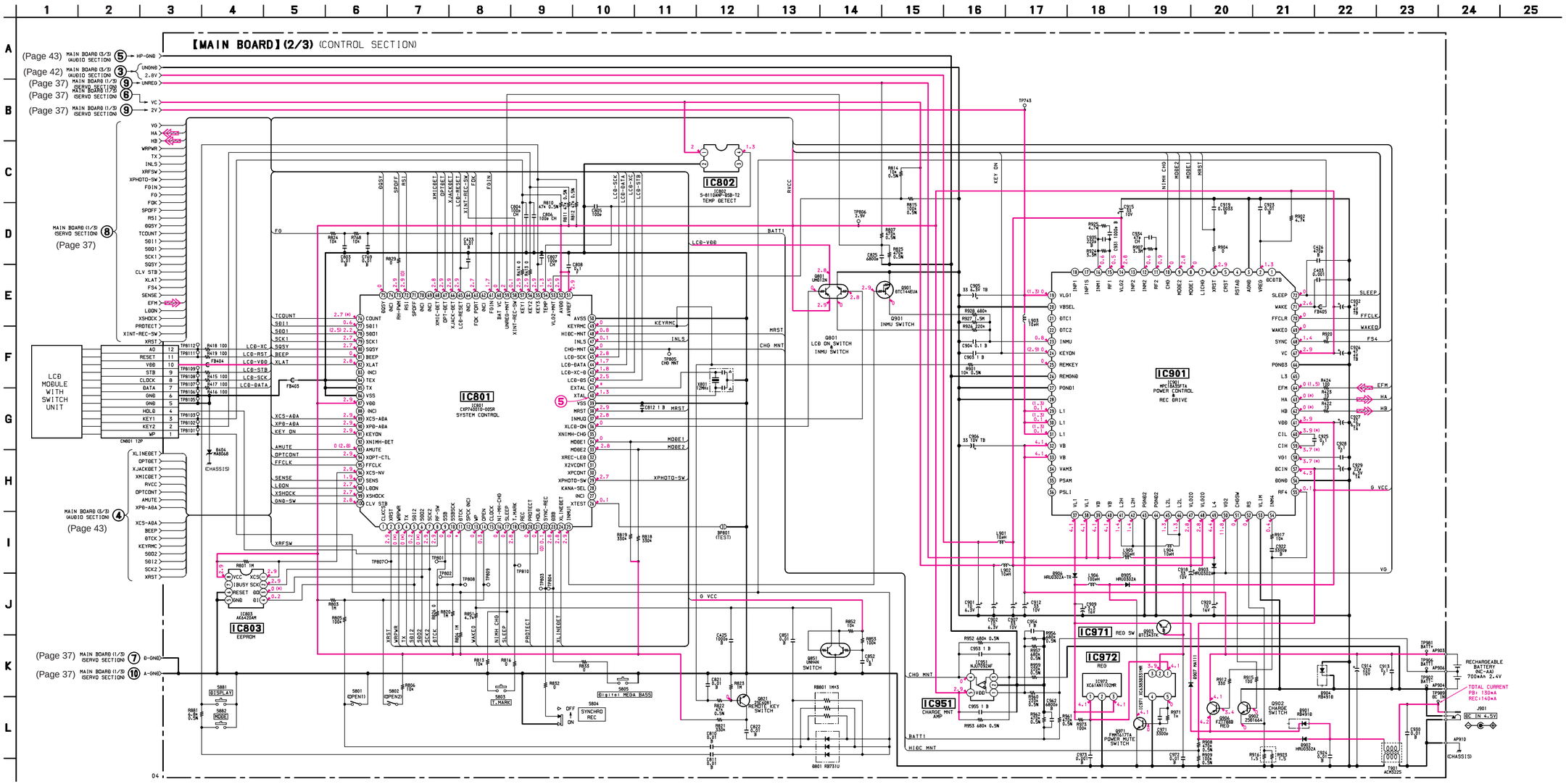
6-7. SCHEMATIC DIAGRAM — MAIN SECTION (2/3) — • Refer to page 44 for IC Block Diagrams.

• **Waveform**

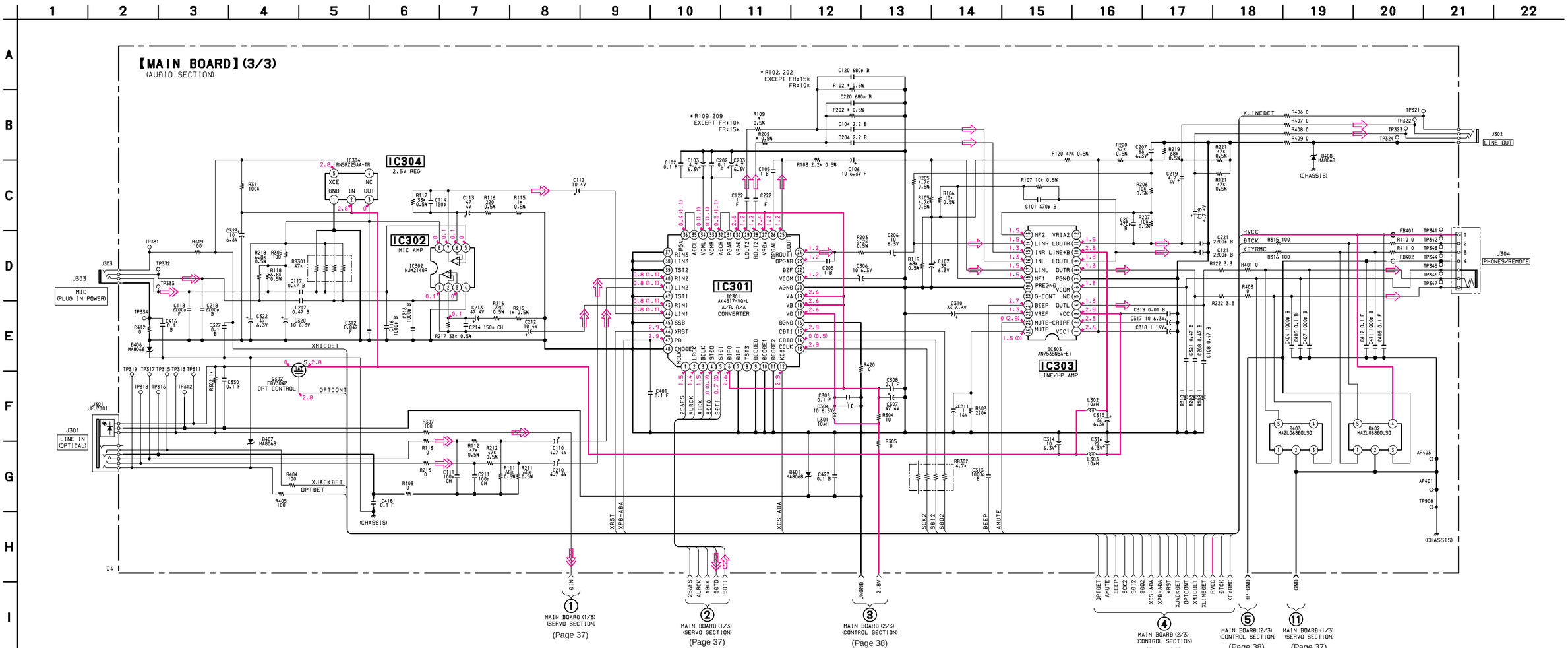


Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- ▭ : panel designation.
- ▬ : B+ Line.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
  ✻ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : REC (digital)



6-8. SCHEMATIC DIAGRAM — MAIN SECTION (3/3) — • Refer to page 44 for IC Block Diagrams.

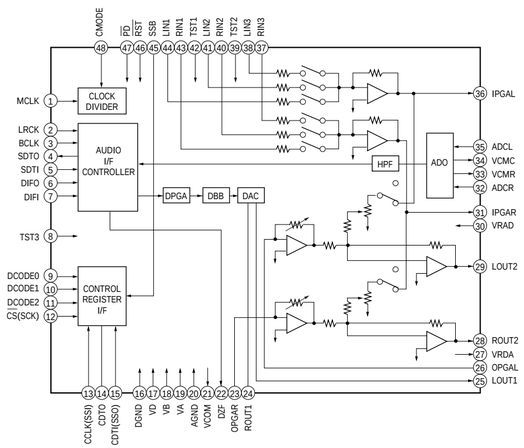


Note:

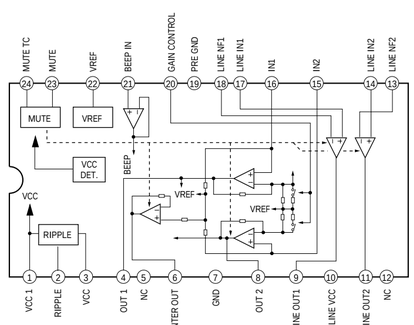
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- % : indicates tolerance.
- ▭ : panel designation.
- ▬ : B+ Line.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from external power voltage jack.
- Voltage is dc with respect to ground under no-signal condition.
  no mark : PB
  ( ) : REC
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : PB (analog)
  ⇨ : REC (analog)
  ⇨ : PB (digital)
  ⇨ : REC (digital)

• IC Block Diagrams

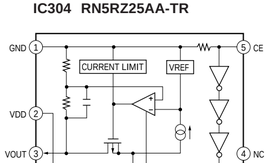
IC301 AK4517-VQ-L



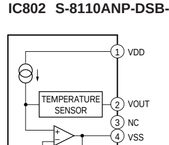
IC303 AN7535SA-E1



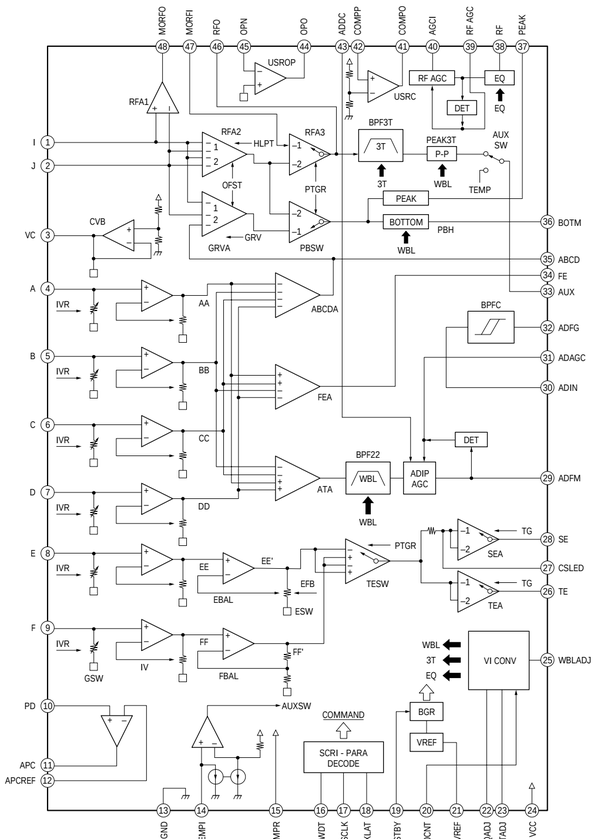
IC304 RN5RZ25AA-TR



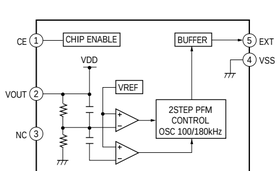
IC802 S-8110ANP-DSB-T2



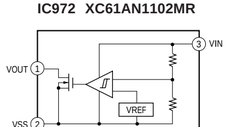
IC501 CXA2523AR



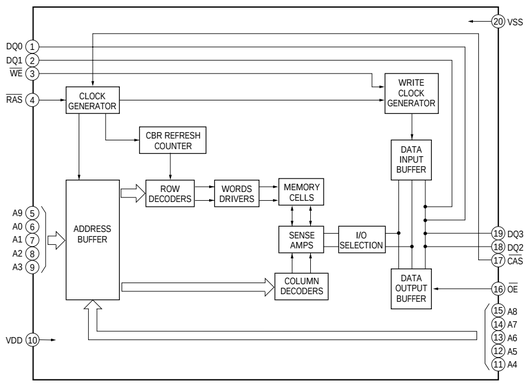
IC971 XC6383D331MR



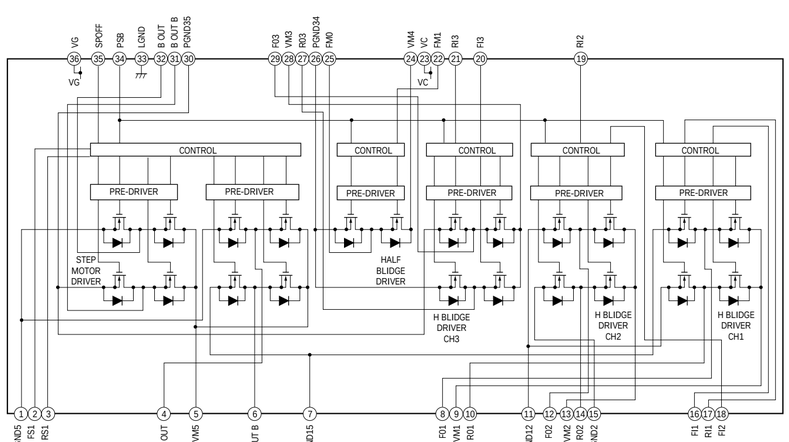
IC972 XC61AN1102MR



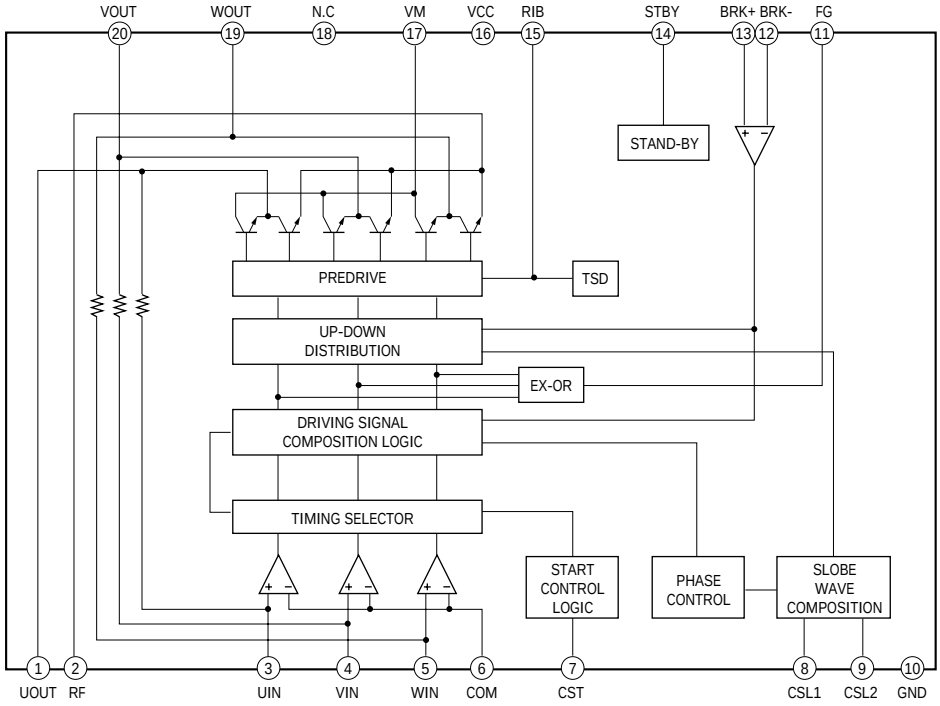
IC602 MN41X4400TT-10TIL



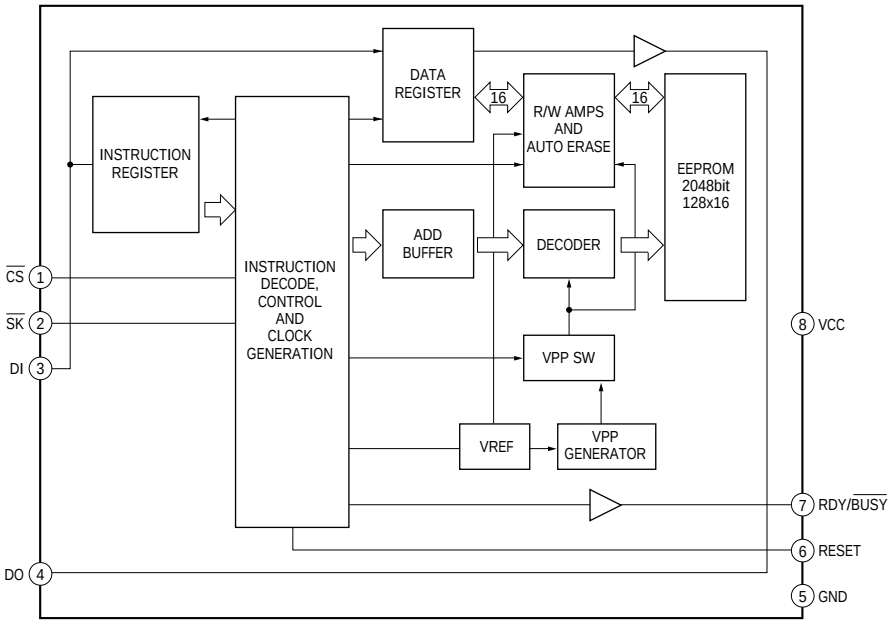
IC701 MPC17A58DTBEL



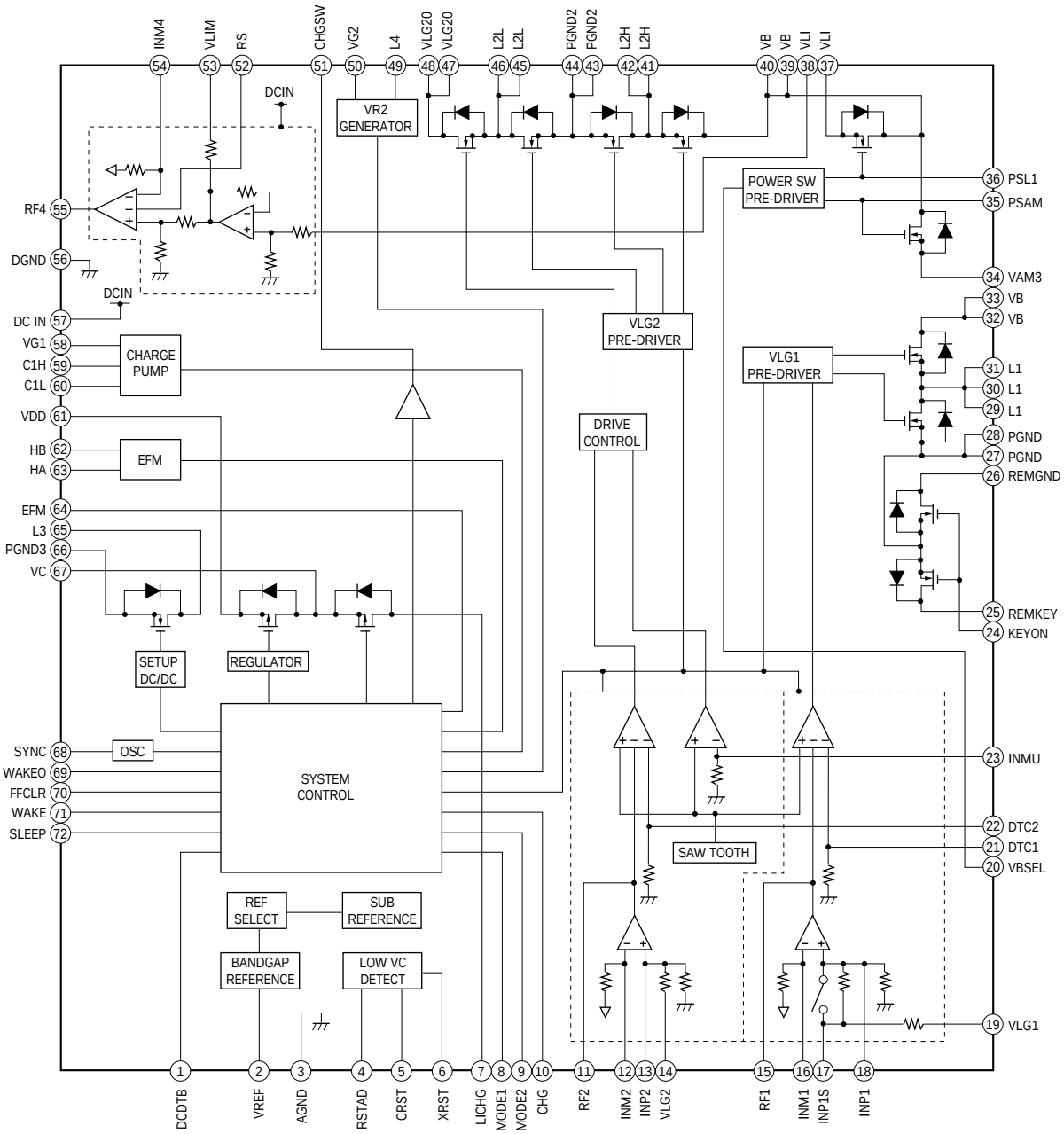
IC761 BA6966FV-E2



IC803 AK6420AM-E



IC901 MPC18A35FTA



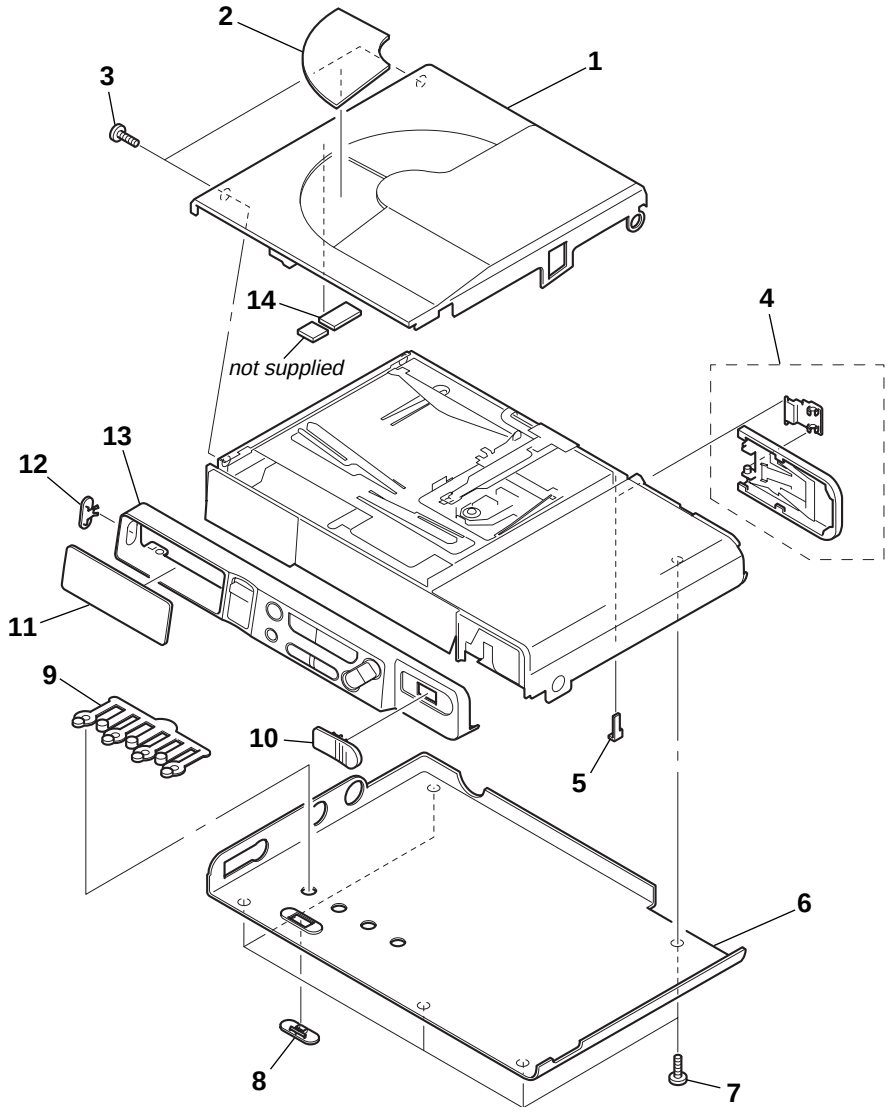
SECTION 7
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Abbreviation
  CND : Canadian model
  FR : French model
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

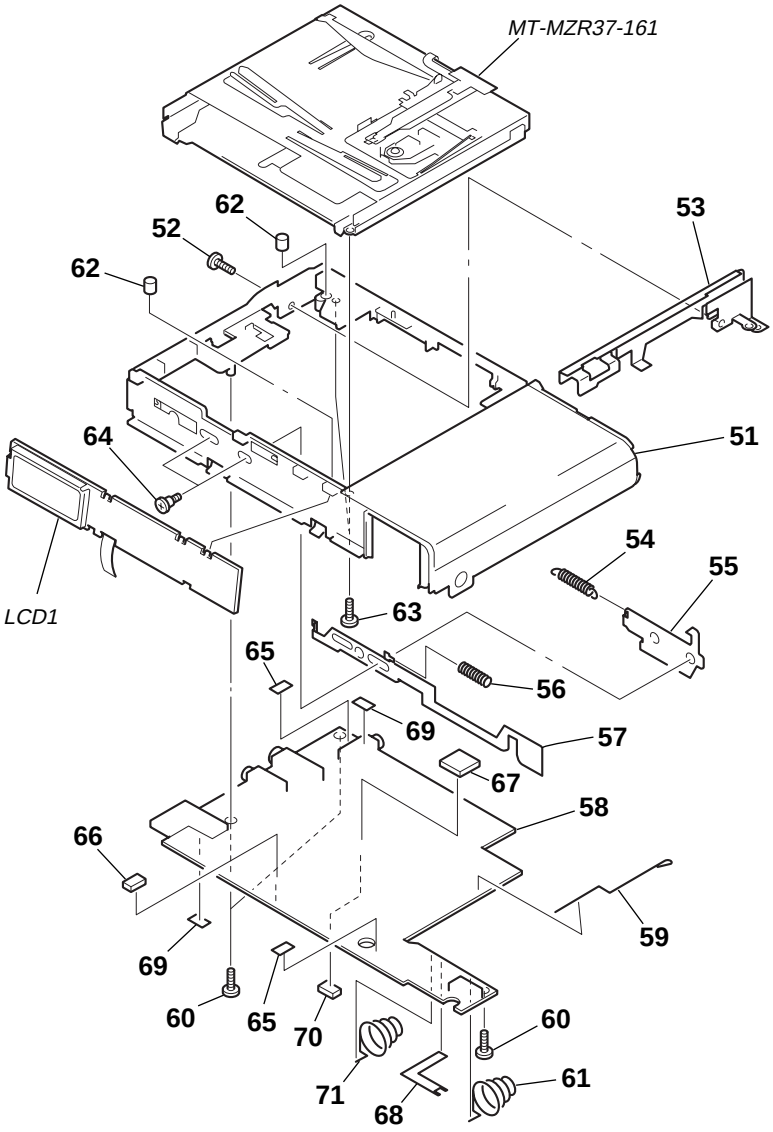
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

7-1. PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	X-4951-492-1	PANEL (S) ASSY, UPPER (SILVER)	
1	X-4951-493-1	PANEL (L) ASSY, UPPER (BLUE)	(EXCEPT US,CND)
2	4-216-591-01	PLATE, ORNAMENTAL	
3	4-963-883-41	SCREW (M1.4), PRECISION PAN	
4	X-4950-928-1	LID (S) ASSY, BATTERY CASE (SILVER)	
4	X-4950-929-1	LID (L) ASSY, BATTERY CASE (BLUE)	(EXCEPT US,CND)
5	4-217-749-01	BEARING (STOPPER)	
6	4-216-610-01	PANEL, BOTTOM (SILVER)	
6	4-216-610-11	PANEL, BOTTOM (BLUE) (EXCEPT US,CND)	
7	3-318-382-11	SCREW (1.7X4.5), TAPPING	
8	4-216-597-01	KNOB (SYNCHRO)	
9	4-216-611-01	BUTTON	
10	4-216-607-01	KNOB (OPEN) (SILVER)	
10	4-216-607-11	KNOB (OPEN) (BLUE) (EXCEPT US,CND)	
11	4-216-600-01	WINDOW (LCD)	
12	4-216-606-01	KNOB (HOLD) (SILVER)	
12	4-216-606-11	KNOB (HOLD) (BLUE) (EXCEPT US,CND)	
13	X-4951-494-1	PANEL (S) ASSY, FRONT (SILVER)	
13	X-4951-495-1	PANEL (L) ASSY, FRONT (BLUE)	(EXCEPT US,CND)
14	4-219-748-01	SPACER (HOLDER)	

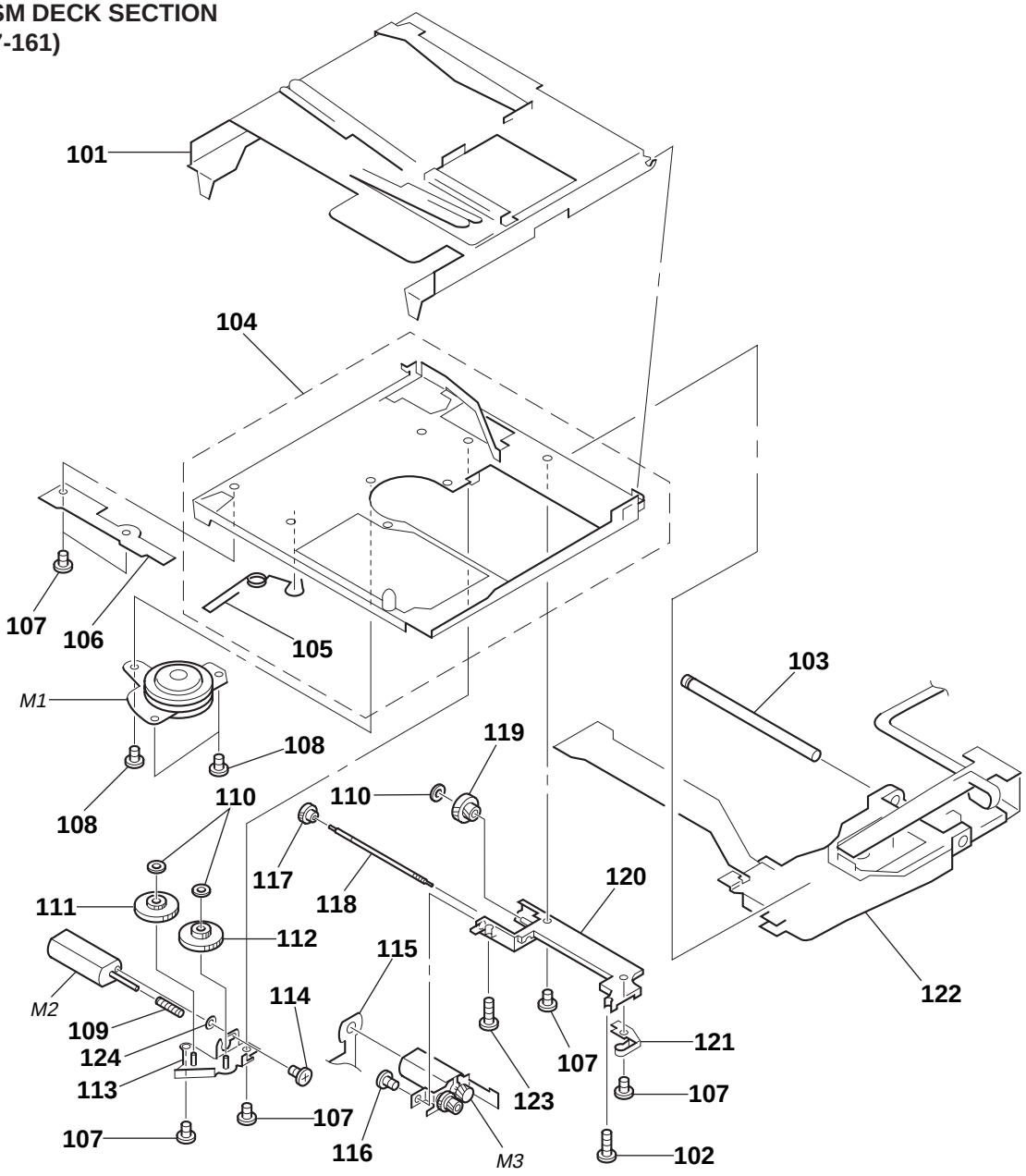
7-2. CABINET (SV) ASSY SECTION



Ref. No.	Part No.	Description	Remark
51	X-4951-496-1	CABINET (S) ASSY (SILVER)	
51	X-4951-497-1	CABINET (L) ASSY (BLUE) (EXCEPT US,CND)	
52	4-963-883-41	SCREW (M1.4), PRECISION PAN	
53	X-4950-927-1	PLATE ASSY, FULCRUM	
54	4-216-593-01	SPRING (LOCK), TENSION	
55	4-216-584-01	LEVER (LOCK)	
56	4-216-594-01	SPRING (OPEN), COMPRESSION	
57	4-216-583-01	LEVER (OPEN)	
58	A-3323-122-A	MAIN BOARD, COMPLETE (FR)	
58	A-3323-123-A	MAIN BOARD, COMPLETE (US,CND)	
58	A-3323-124-A	MAIN BOARD, COMPLETE (EXCEPT US,CND,FR)	
59	4-216-592-01	TERMINAL (A), BATTERY DETECTION	
60	3-318-382-11	SCREW (1.7X4.5), TAPPING	

Ref. No.	Part No.	Description	Remark
61	4-216-598-01	SPRING, BATTERY COIL	
62	4-212-820-01	DAMPER	
63	4-982-382-11	SCREW (MD), STEP	
64	4-216-585-01	SCREW, STEP	
65	4-220-363-01	SPACER (POWER)	
66	4-219-746-01	SPACER (MD)	
67	4-216-582-11	SPACER	
68	4-219-414-01	PLATE, RADIATION	
69	4-220-364-01	SPACER (MIC A)	
70	4-219-747-01	SPACER (MAIN)	
71	4-220-442-01	SPRING (A), BATTERY COIL	
LCD1	1-803-367-11	LCD MODULE	

7-3. MECHANISM DECK SECTION (MT-MZR37-161)



The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	X-4950-391-1	HOLDER ASSY	
102	3-704-197-31	SCREW (M1.4X3.0), LOCKING	
103	4-212-312-01	SHAFT, MAIN	
104	X-4950-390-1	CHASSIS ASSY	
105	4-995-585-11	SPRING (LIMITER), TORSION	
106	1-418-079-11	PR UNIT	
107	4-963-883-41	SCREW (M1.4), PRECISION PAN	
108	4-963-883-01	SCREW (M1.4), PRECISION PAN	
109	4-212-308-01	GEAR, WORM	
110	3-338-645-31	WASHER (0.8-2.5)	
111	4-212-310-01	GEAR (RACK)	
112	4-212-309-01	GEAR (WORM WHEEL)	
113	X-4950-392-1	CHASSIS ASSY, GEAR	
114	4-212-862-01	SCREW (M1X1.3), PRECISION	
115	1-671-605-11	MD FLEXIBLE BOARD	
116	3-015-033-01	SCREW (DIA. 1.4X4), PRECISION	
117	4-995-586-01	GEAR (SD)	
118	4-900-615-01	SCREW, LEAD	
119	4-995-578-01	GEAR (SC)	
120	X-4949-131-1	BRACKET (S) ASSY	
121	4-995-571-01	SPRING, THRUST	
⚠122	A-3328-294-A	OP SERVICE ASSY	
123	4-997-172-01	SCREW (M1.4X3)	
124	4-216-266-01	WASHER (MOTOR HEAD)	
M1	1-763-011-11	MOTOR (SPINDLE) (INCLUDING TURN TABLE)	
M2	1-763-174-21	MOTOR, DC (LOADING)	
M3	A-3311-972-A	MOTOR BLOCK ASSY, SLED (SLED)	

MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Abbreviation
  CND : Canadian model
  FR : French model
  EE : East European model
  AUS : Australian model
  JE : Tourist model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ, for example:
  uA.. : µA.. uPA.. : µPA..
  uPB.. : µPB.. uPC.. : µPC.. uPD.. : µPD..
- CAPACITORS
  uF : µF
- COILS
  uH : µH

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-3323-122-A	MAIN BOARD, COMPLETE (FR)			
	A-3323-123-A	MAIN BOARD, COMPLETE (US,CND)			
	A-3323-124-A	MAIN BOARD, COMPLETE (EXCEPT US,CND,FR)			
		**********			
		< CAPACITOR >			
C101	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C102	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C103	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C104	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C105	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C106	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C107	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C108	1-113-619-11	CERAMIC CHIP	0.47uF	10%	6.3V
C110	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C111	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C112	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C113	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C114	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C116	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C117	1-125-985-11	CERAMIC CHIP	0.47uF	10%	25V
C118	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C119	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C120	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C121	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C122	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C201	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C202	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C203	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C204	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C205	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C206	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C207	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C208	1-113-619-11	CERAMIC CHIP	0.47uF	10%	6.3V
C210	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C211	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C212	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C213	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C214	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C216	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C217	1-125-985-11	CERAMIC CHIP	0.47uF	10%	25V
C218	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C219	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C220	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C221	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V

Ref. No.	Part No.	Description			Remark
C222	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C303	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C304	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C306	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C307	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C308	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C310	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C311	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C312	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C313	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C314	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C315	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C316	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C317	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C318	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C320	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C321	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C322	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C323	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C327	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C330	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C401	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C403	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C404	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C405	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C407	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C409	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C411	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C412	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C416	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C418	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C423	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C425	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C426	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C427	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C461	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C501	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C502	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C504	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C506	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C507	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C508	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C511	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C512	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C515	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C518	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C520	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C571	1-115-169-11	TANTALUM	10uF	20%	6.3V
C601	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C602	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C604	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C605	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C606	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C607	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C608	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C609	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C610	1-113-619-11	CERAMIC CHIP	0.47uF	10%	6.3V
C611	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C613	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C614	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C615	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C701	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C702	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C703	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C704	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C705	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C706	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C707	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C709	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C741	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C742	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C743	1-109-814-11	CERAMIC CHIP	220PF	5%	100V
C761	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C762	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C763	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C764	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C765	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C766	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C767	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C768	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C769	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C770	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C803	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C804	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C805	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C806	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C807	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C808	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C810	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C811	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C812	1-115-156-11	CERAMIC CHIP	1uF		10V
C821	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C822	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C825	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C851	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C852	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C901	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C902	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C903	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C904	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C905	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C906	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C907	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C909	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V
C912	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C913	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C914	1-128-394-11	ELECT CHIP	220uF	20%	10V
C915	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C918	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C919	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C920	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C922	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C923	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C924	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C925	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C926	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C927	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C928	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C929	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C930	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C931	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C932	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C934	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C935	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C953	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C954	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C955	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C962	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C971	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C972	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C973	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V

< CONNECTOR >

CN501	1-691-386-11	CONNECTOR, FFC/FPC 22P
CN701	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P
CN702	1-778-711-11	CONNECTOR, FFC/FPC (ZIF) 5P
CN801	1-691-376-21	CONNECTOR, FFC/FPC 12P

< DIODE >

D401	8-719-017-58	DIODE MA8068
D402	8-719-068-83	DIODE MAZL068D0LS0-TX/L
D403	8-719-068-83	DIODE MAZL068D0LS0-TX/L
D404	8-719-017-58	DIODE MA8068
D406	8-719-017-58	DIODE MA8068
D407	8-719-017-58	DIODE MA8068
D408	8-719-017-58	DIODE MA8068
D741	8-719-072-77	DIODE MA3XD17001SO
D742	8-719-072-77	DIODE MA3XD17001SO

MAIN

Ref. No.	Part No.	Description	Remark
D801	8-719-045-67	DIODE RB731U-T108	
D901	8-719-066-16	DIODE RB491D-T146	
D902	8-719-047-73	DIODE HRU0302A-TR	
D903	8-719-047-73	DIODE HRU0302A-TR	
D904	8-719-066-16	DIODE RB491D-T146	
D905	8-719-047-73	DIODE HRU0302A-TR	
D906	8-719-047-73	DIODE HRU0302A-TR	
D907	8-719-404-50	DIODE MA111-TX	
		< FERRITE BEAD >	
FB401	1-414-228-21	INDUCTOR, FERRITE BEAD	
FB402	1-414-228-21	INDUCTOR, FERRITE BEAD	
FB403	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB404	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB405	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB406	1-414-234-22	INDUCTOR, FERRITE BEAD	
FB461	1-216-864-11	METAL CHIP 0 5%	1/16W
FB462	1-216-864-11	METAL CHIP 0 5%	1/16W
FB463	1-414-228-21	INDUCTOR, FERRITE BEAD	
FB464	1-414-228-21	INDUCTOR, FERRITE BEAD	
		< IC >	
IC301	8-759-584-59	IC AK4517A-VQ-L	
IC302	8-759-572-38	IC NJM2140R	
IC303	8-759-584-58	IC AN7535NSA-E1	
IC304	8-759-559-91	IC RN5RZ25AA-TR	
IC501	8-752-080-95	IC CXA2523AR	
IC601	8-752-384-47	IC CXD2652AR	
IC602	8-759-565-50	IC XN41X4400TT-10TIL	
IC701	8-759-559-60	IC MPC17A58DTBEL	
IC761	8-759-559-62	IC BA6966FV-E2	
IC801	8-752-902-01	IC CXP740010-005R	
IC802	8-759-559-93	IC S-8110ANP-DSB-T2	
IC803	8-759-468-72	IC AK6420AM-E2	
IC901	8-759-559-59	IC MPC18A35FTA	
IC951	8-759-528-75	IC NJU7092AF-TE2	
IC971	8-759-585-38	IC XC6383D331MR	
IC972	8-759-173-00	IC XC61AN1102MR	
J301	8-749-015-24	IC JFJ7000 (LINE IN (OPTICAL))	
		< JACK >	
J302	1-779-881-11	JACK (LINE OUT)	
J303	1-779-881-21	JACK (MIC (PLUG IN POWER))	
J304	1-778-179-11	JACK (PHONES/REMOTE)	
J901	1-778-153-11	JACK, DC (POLARITY UNIFIED TYPE)	(DC IN 4.5V)
		< COIL >	
L301	1-414-398-11	INDUCTOR 10uH	
L302	1-414-398-11	INDUCTOR 10uH	
L303	1-414-398-11	INDUCTOR 10uH	
L501	1-414-398-11	INDUCTOR 10uH	
L601	1-414-398-11	INDUCTOR 10uH	
L701	1-410-389-31	INDUCTOR CHIP 47uH	
L702	1-410-389-31	INDUCTOR CHIP 47uH	
L703	1-410-389-31	INDUCTOR CHIP 47uH	
L704	1-410-389-31	INDUCTOR CHIP 47uH	
L705	1-410-389-31	INDUCTOR CHIP 47uH	
L706	1-414-398-11	INDUCTOR 10uH	
L707	1-414-398-11	INDUCTOR 10uH	
L901	1-414-398-11	INDUCTOR 10uH	
L902	1-414-398-11	INDUCTOR 10uH	
L903	1-416-344-11	INDUCTOR 10uH	
L904	1-416-344-11	INDUCTOR 10uH	
L905	1-416-510-21	INDUCTOR 100uH	
L906	1-469-426-21	INDUCTOR 100uH	
		< TRANSISTOR >	
Q302	8-729-046-49	TRANSISTOR FDV304P	
Q571	8-729-046-46	TRANSISTOR XN04407001SO	
Q741	8-729-046-43	TRANSISTOR HAT2051T-EL	
Q742	8-729-046-42	TRANSISTOR HAT2050T-EL	
Q761	8-729-028-91	TRANSISTOR DTA144EUA-T106	
Q801	8-729-047-48	TRANSISTOR UMD12N-TR	
Q821	8-729-905-35	TRANSISTOR 2SC4081-R	
Q851	8-729-930-18	TRANSISTOR UMH4-TN	
Q901	8-729-029-14	TRANSISTOR DTC144EUA-T106	
Q902	8-729-920-87	TRANSISTOR 2SD1664-T101-QR	
Q903	8-729-920-19	TRANSISTOR DTC343TK-T146	
Q906	8-729-042-81	TRANSISTOR FZT788BTC	
Q971	8-729-041-51	TRANSISTOR FMMT617TA	
		< RESISTOR >	
R102	1-218-871-11	RES,CHIP 10K 0.50%	1/16W (FR)
R102	1-218-875-11	RES,CHIP 15K 0.50%	1/16W (EXCEPT FR)
R103	1-218-855-11	RES,CHIP 2.2K 0.50%	1/16W
R105	1-218-863-11	RES,CHIP 4.7K 0.50%	1/16W
R106	1-218-871-11	RES,CHIP 10K 0.50%	1/16W
R107	1-218-871-11	RES,CHIP 10K 0.50%	1/16W
R108	1-218-446-11	METAL CHIP 1 5%	1/16W
R109	1-218-871-11	RES,CHIP 10K 0.50%	1/16W (EXCEPT FR)
R109	1-218-875-11	RES,CHIP 15K 0.50%	1/16W (FR)
R111	1-218-891-11	RES,CHIP 68K 0.50%	1/16W
R112	1-218-887-11	RES,CHIP 47K 0.50%	1/16W
R113	1-216-864-11	METAL CHIP 0 5%	1/16W
R115	1-218-847-11	RES,CHIP 1K 0.50%	1/16W
R116	1-218-831-11	RES,CHIP 220 0.50%	1/16W
R117	1-218-883-11	RES,CHIP 33K 0.50%	1/16W
R118	1-218-867-11	RES,CHIP 6.8K 0.50%	1/16W
R119	1-218-891-11	RES,CHIP 68K 0.50%	1/16W
R120	1-218-887-11	RES,CHIP 47K 0.50%	1/16W
R121	1-218-887-11	RES,CHIP 47K 0.50%	1/16W
R122	1-216-791-11	METAL CHIP 3.3 5%	1/16W
R202	1-218-871-11	RES,CHIP 10K 0.50%	1/16W (FR)

Ref. No.	Part No.	Description			Remark
R202	1-218-875-11	RES,CHIP	15K	0.50%	1/16W (EXCEPT FR)
R203	1-218-855-11	RES,CHIP	2.2K	0.50%	1/16W
R205	1-218-863-11	RES,CHIP	4.7K	0.50%	1/16W
R206	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R207	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R208	1-218-446-11	METAL CHIP	1	5%	1/16W
R209	1-218-871-11	RES,CHIP	10K	0.50%	1/16W (EXCEPT FR)
R209	1-218-875-11	RES,CHIP	15K	0.50%	1/16W (FR)
R211	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R212	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R213	1-216-864-11	METAL CHIP	0	5%	1/16W
R215	1-218-847-11	RES,CHIP	1K	0.50%	1/16W
R216	1-218-831-11	RES,CHIP	220	0.50%	1/16W
R217	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R218	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R219	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R220	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R221	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R222	1-216-791-11	METAL CHIP	3.3	5%	1/16W
R302	1-216-821-11	METAL CHIP	1K	5%	1/16W
R303	1-216-849-11	METAL CHIP	220K	5%	1/16W
R304	1-216-797-11	METAL CHIP	10	5%	1/16W
R305	1-216-864-11	METAL CHIP	0	5%	1/16W
R307	1-216-809-11	METAL CHIP	100	5%	1/16W
R308	1-216-864-11	METAL CHIP	0	5%	1/16W
R309	1-216-809-11	METAL CHIP	100	5%	1/16W
R310	1-218-446-11	METAL CHIP	1	5%	1/16W
R311	1-216-845-11	METAL CHIP	100K	5%	1/16W
R315	1-216-809-11	METAL CHIP	100	5%	1/16W
R316	1-216-809-11	METAL CHIP	100	5%	1/16W
R319	1-216-809-11	METAL CHIP	100	5%	1/16W
R401	1-216-864-11	METAL CHIP	0	5%	1/16W
R403	1-216-864-11	METAL CHIP	0	5%	1/16W
R404	1-216-809-11	METAL CHIP	100	5%	1/16W
R405	1-216-809-11	METAL CHIP	100	5%	1/16W
R406	1-216-864-11	METAL CHIP	0	5%	1/16W
R407	1-216-864-11	METAL CHIP	0	5%	1/16W
R408	1-216-864-11	METAL CHIP	0	5%	1/16W
R409	1-216-864-11	METAL CHIP	0	5%	1/16W
R410	1-216-864-11	METAL CHIP	0	5%	1/16W
R411	1-216-864-11	METAL CHIP	0	5%	1/16W
R412	1-216-864-11	METAL CHIP	0	5%	1/16W
R413	1-216-864-11	METAL CHIP	0	5%	1/16W
R414	1-216-864-11	METAL CHIP	0	5%	1/16W
R415	1-216-809-11	METAL CHIP	100	5%	1/16W
R416	1-216-809-11	METAL CHIP	100	5%	1/16W
R417	1-216-809-11	METAL CHIP	100	5%	1/16W
R418	1-216-809-11	METAL CHIP	100	5%	1/16W
R419	1-216-809-11	METAL CHIP	100	5%	1/16W
R420	1-216-864-11	METAL CHIP	0	5%	1/16W
R422	1-216-797-11	METAL CHIP	10	5%	1/16W
R423	1-216-797-11	METAL CHIP	10	5%	1/16W
R424	1-216-809-11	METAL CHIP	100	5%	1/16W
R461	1-216-864-11	METAL CHIP	0	5%	1/16W
R462	1-216-864-11	METAL CHIP	0	5%	1/16W
R463	1-216-864-11	METAL CHIP	0	5%	1/16W
R464	1-216-811-11	METAL CHIP	150	5%	1/16W
R501	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R502	1-216-859-11	RES,CHIP	1.5M	5%	1/16W
R503	1-216-853-11	METAL CHIP	470K	5%	1/16W
R504	1-216-835-11	METAL CHIP	15K	5%	1/16W
R505	1-216-835-11	METAL CHIP	15K	5%	1/16W
R506	1-216-845-11	METAL CHIP	100K	5%	1/16W
R507	1-216-843-11	METAL CHIP	68K	5%	1/16W
R508	1-216-843-11	METAL CHIP	68K	5%	1/16W
R509	1-216-833-11	METAL CHIP	10K	5%	1/16W
R510	1-216-821-11	METAL CHIP	1K	5%	1/16W
R511	1-216-864-11	METAL CHIP	0	5%	1/16W
R512	1-216-864-11	METAL CHIP	0	5%	1/16W
R571	1-218-446-11	METAL CHIP	1	5%	1/16W
R572	1-216-833-11	METAL CHIP	10K	5%	1/16W
R573	1-216-817-11	METAL CHIP	470	5%	1/16W
R574	1-216-811-11	METAL CHIP	150	5%	1/16W
R601	1-216-845-11	METAL CHIP	100K	5%	1/16W
R602	1-216-845-11	METAL CHIP	100K	5%	1/16W
R603	1-216-811-11	METAL CHIP	150	5%	1/16W
R604	1-216-821-11	METAL CHIP	1K	5%	1/16W
R606	1-216-809-11	METAL CHIP	100	5%	1/16W
R607	1-216-821-11	METAL CHIP	1K	5%	1/16W
R608	1-216-821-11	METAL CHIP	1K	5%	1/16W
R609	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R610	1-216-841-11	METAL CHIP	47K	5%	1/16W
R611	1-216-853-11	METAL CHIP	470K	5%	1/16W
R612	1-216-845-11	METAL CHIP	100K	5%	1/16W
R614	1-216-833-11	METAL CHIP	10K	5%	1/16W
R618	1-216-803-11	METAL CHIP	33	5%	1/16W
R702	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R706	1-216-864-11	METAL CHIP	0	5%	1/16W
R761	1-217-671-11	METAL CHIP	1	5%	1/10W
R762	1-216-835-11	METAL CHIP	15K	5%	1/16W
R763	1-216-864-11	METAL CHIP	0	5%	1/16W
R764	1-216-815-11	METAL CHIP	330	5%	1/16W
R766	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R767	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R768	1-216-833-11	METAL CHIP	10K	5%	1/16W
R801	1-216-857-11	METAL CHIP	1M	5%	1/16W
R803	1-216-857-11	METAL CHIP	1M	5%	1/16W
R804	1-216-857-11	METAL CHIP	1M	5%	1/16W
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W
R806	1-216-833-11	METAL CHIP	10K	5%	1/16W
R807	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R810	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R811	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R812	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R813	1-216-833-11	METAL CHIP	10K	5%	1/16W
R814	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R815	1-218-895-11	RES,CHIP	100K	0.50%	1/16W

MAIN

Ref. No.	Part No.	Description			Remark
R816	1-216-864-11	METAL CHIP	0	5%	1/16W
R818	1-216-851-11	METAL CHIP	330K	5%	1/16W
R819	1-216-851-11	METAL CHIP	330K	5%	1/16W
R820	1-216-857-11	METAL CHIP	1M	5%	1/16W
R821	1-216-851-11	METAL CHIP	330K	5%	1/16W
R822	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R823	1-216-857-11	METAL CHIP	1M	5%	1/16W
R824	1-216-833-11	METAL CHIP	10K	5%	1/16W
R825	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R826	1-216-864-11	METAL CHIP	0	5%	1/16W
R829	1-216-864-11	METAL CHIP	0	5%	1/16W
R832	1-216-864-11	METAL CHIP	0	5%	1/16W
R833	1-216-864-11	METAL CHIP	0	5%	1/16W
R851	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R852	1-216-833-11	METAL CHIP	10K	5%	1/16W
R853	1-216-845-11	METAL CHIP	100K	5%	1/16W
R881	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R901	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R902	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R904	1-216-864-11	METAL CHIP	0	5%	1/16W
R907	1-216-863-11	RES,CHIP	3.3M	5%	1/16W
R908	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R909	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R912	1-216-815-11	METAL CHIP	330	5%	1/16W
R915	1-216-809-11	METAL CHIP	100	5%	1/16W
R916	1-217-905-11	RES,CHIP	1.5	5%	1/10W
R917	1-216-833-11	METAL CHIP	10K	5%	1/16W
R920	1-216-864-11	METAL CHIP	0	5%	1/16W
R923	1-217-905-11	RES,CHIP	1.5	5%	1/10W
R924	1-216-863-11	RES,CHIP	3.3M	5%	1/16W
R925	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R926	1-216-849-11	METAL CHIP	220K	5%	1/16W
R927	1-216-859-11	RES,CHIP	1.5M	5%	1/16W
R928	1-216-855-11	METAL CHIP	680K	5%	1/16W
R952	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R953	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R956	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R957	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R959	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R960	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R961	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R962	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R971	1-216-821-11	METAL CHIP	1K	5%	1/16W
R973	1-216-845-11	METAL CHIP	100K	5%	1/16W
		< NETWORK RESISTOR >			
RB301	1-233-971-11	RES, NETWORK (CHIP TYPE) 47K			
RB302	1-233-965-11	RES, NETWORK (CHIP TYPE) 4.7K			
RB501	1-233-963-21	RES, NETWORK (CHIP TYPE) 2.2K			
RB801	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M			
		< SWITCH >			
S801	1-762-805-21	SWITCH, PUSH (1 KEY) (OPEN1)			
S802	1-572-467-61	SWITCH, PUSH (1 KEY) (OPEN2)			
S803	1-771-138-21	SWITCH, KEY BOARD (T.MARK)			
S804	1-762-078-11	SWITCH, SLIDE (SYNCHRO REC)			
S805	1-771-138-21	SWITCH, KEY BOARD (Digital MEGA BASS)			
S881	1-771-138-21	SWITCH, KEY BOARD (DISPLAY)			
S882	1-771-138-21	SWITCH, KEY BOARD (MODE)			
		< TRANSFORMER >			
T901	1-416-405-21	FILTER, CHIP EMI (COMMON MODE)			
		< VIBRATOR >			
X601	1-767-722-21	VIBRATOR, CRYSTAL (22.5MHz)			
X801	1-760-174-11	VIBRATOR, SERAMIC (12MHz)			

****

MISCELLANEOUS
****

106	1-418-079-11	PR UNIT
115	1-671-605-11	MD FLEXIBLE BOARD
⚠122	A-3328-294-A	OP SERVICE ASSY
LCD1	1-803-367-11	LCD MODULE
M1	1-763-011-11	MOTOR (SPINDLE) (INCLUDING TURN TABLE)
M2	1-763-174-21	MOTOR, DC (LOADING)
M3	A-3311-972-A	MOTOR BLOCK ASSY, SLED (SLED)

****

ACCESSORIES & PACKING MATERIALS
****

⚠	1-418-095-11	ADAPTOR, AC (AC-MZR37) (UK)
⚠	1-418-096-11	ADAPTOR, AC (AC-MZR37) (AUS)
	1-418-110-11	REMOTE CONTROL UNIT (SZR-S17)
⚠	1-467-009-21	ADAPTOR, AC (AC-E455) (US,CND)
⚠	1-467-550-11	ADAPTOR, AC (AC-E455A) (E,JE)
⚠	1-473-116-35	ADAPTOR, AC (AC-E455D) (AEP,FR,EE)
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (E,JE)
	1-779-504-11	CONNECTOR, OPTICAL (MC-918)
*	3-686-294-02	IC LABEL (INDUSTRY CANADA) (CND)
	3-866-346-11	MANUAL, INSTRUCTION (ENGLISH) (US,AEP,UK,EE,AUS,E,JE)
	3-866-346-21	MANUAL, INSTRUCTION (ENGLISH,FRENCH) (CND,AEP,FR)
	3-866-346-31	MANUAL, INSTRUCTION (GERMAN,DUTCH) (AEP)
	3-866-346-41	MANUAL, INSTRUCTION (ITALIAN) (AEP)
	3-866-346-51	MANUAL, INSTRUCTION (PORTUGUESE, SPANISH) (AEP,JE)
	3-866-346-61	MANUAL, INSTRUCTION (SWEDISH,FINNISH) (AEP)
	3-866-346-71	MANUAL, INSTRUCTION (RUSSIAN,POLISH, CZECH,HUNGARIAN) (EE)
	3-866-346-81	MANUAL, INSTRUCTION (TRADITIONAL CHINESE,SPANISH, KOREAN) (E,JE)
	8-953-278-90	HEADPHONE MDR-A34SP SET (US)
	8-953-304-90	RECEIVER MDR-E805SP SET (EXCEPT US)

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Sony Corporation
Personal A&V Products Company

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MZ-R37

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model
Australian Model
Tourist Model

Self Diagnosis Supported model

Ver 1.2 1999. 06
With SUPPLEMENT-1
(9-926-952-81)

US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

Model Name Using Similar Mechanism	MZ-R55
MiniDisc Mechanism Type	MT-MZR37-161
Optical Pick-up Type	KMS-280A

SPECIFICATIONS

System
Audio playing system
MiniDisc digital audio system
Laser diode properties
Material: GaAlAs
Wavelength: λ = 780 nm
Emission duration: continuous
Laser output: less than 44.6 μW
(This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block with 7 mm aperture.)
Recording and playback time
Maximum 74 minutes (MDW-74, stereo recording)
Maximum 148 minutes (MDW-74, monaural recording)
Revolutions
400 rpm to 900 rpm (CLV)
Error correction
Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency
44.1 kHz
Sampling rate converter
Input: 32 kHz / 44.1 kHz / 48 kHz
Coding
Adaptive TRansform Acoustic Coding (ATRAC)
Modulation system
EFM (Eight to Fourteen Modulation)
Number of channels
2 stereo channels
1 monaural channel

Frequency response
20 to 20,000 Hz ± 3 dB
Wow and Flutter
Below measurable limit
Inputs
MIC (PLUG IN POWER): stereo mini-jack, 0.35–1.38 mV
(OPTICAL) LINE IN: stereo mini-jack with optical (digital) in
• Line in: 69–194 mV
• Optical (digital) in: wave length 660 nm
Outputs
PHONES/REMOTE: stereo mini-jack, maximum output level 5 mW + 5 mW, load impedance 16 ohm
LINE OUT: stereo mini-jack, 194 mV, load impedance 10 kilohm or greater

General
Power requirements
Sony AC Power Adaptor (supplied)
connected at the DC IN 4.5 V jack:
120 V AC, 60 Hz (US, Canadian model)
220–230 V AC, 50/60 Hz (AEP model)
230–240 V AC, 50 Hz (UK model)
240 V AC, 50 Hz (Australian and New Zealand model)
Two nickel-cadmium rechargeable batteries
NC-AA (supplied)
Two LR6 (size AA) alkaline batteries (not supplied)

– Continued on next page –

PORTABLE MINIDISC RECORDER

MICROFILM

SONY®

Battery operation time[1)]

Batteries	Recording[2)]	Playback
Two NC-AA nickel-cadmium rechargeable batteries	Approx. 3 hours	Approx. 5 hours
Two LR6 (size AA) Sony alkaline dry batteries	——[3)]	Approx. 13 hours

[1)]The battery life may be shorter due to operating conditions and the temperature of the location.
[2)] When you record, use fully charged rechargeable batteries.
[3)] Recording time may differ according to the alkaline batteries.

Dimensions
Approx. 116.8 × 18.5 × 86.1 mm (w/h/d)
(4 5/8 × 3/4 × 3 1/2 in.)

Mass
Approx. 160 g (5.6 oz) the recorder only
Approx. 220 g (7.8 oz) incl. a recordable MD, and two NC-AA nickel-cadmium rechargeable batteries

Supplied accessories
Optical cable (1) (MC-918)
AC power adaptor (1) (AC-MZR37)
Headphones with a remote control (1) (SZR-S17)
NC-AA nickel-cadmium rechargeable batteries (2)
Rechargeable battery carrying case (1)

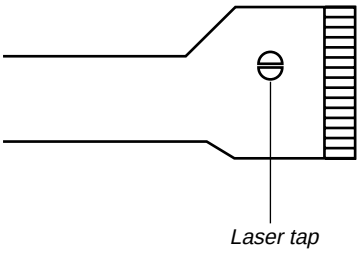
Design and specifications are subject to change without notice.

Precautions for Laser Diode Emission Check

When checking the emission of the laser diode during adjustments, never view directly downwards as this may lead to blindness.

Precautions for Using Optical Pick-up (KMS-280A)

As the laser diode inside the optical pick-up damages by static electricity easily, solder the laser tap of the Optical pick-up flexible board when handling. Also take the necessary measures to prevent damages by static electricity. Handle the Optical pick-up flexible board with care as it breaks easily.



Optical Pick-up flexible board

This MiniDisc player is classified as a CLASS 1 LASER product.
The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

“MD WALKMAN” is a trademark of Sony Corporation.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

SAFETY-RELATED COMPONENT WARNING!!

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION.
REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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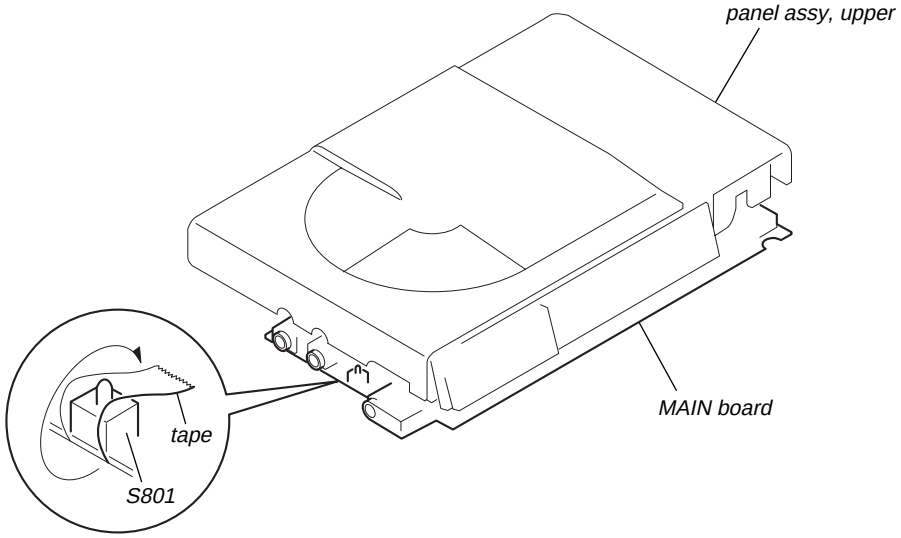
SERVICING NOTE

1) When repairing this device with the power on, if you remove the main board or open the upper panel assy, this device stops working.
In this case, you can work without the device stopping by fastening the hook of the OPEN1 switch (S801) with tape.



2) This set is designed to perform automatic adjustment for each adjustment and write its value to EEPROM. Therefore, when EEPROM (IC803) has been replaced in service, be sure to perform automatic adjustment and write resultant values to the new EEPROM.
Refer to page 12 for details.

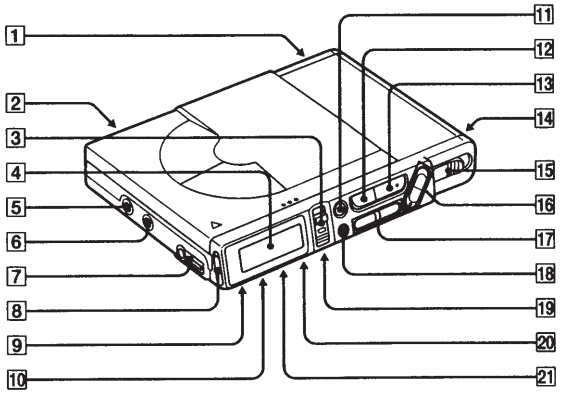
SECTION 1
GENERAL

This section is extracted from instruction manual.

Looking at the controls

See pages in ( ) for more details.

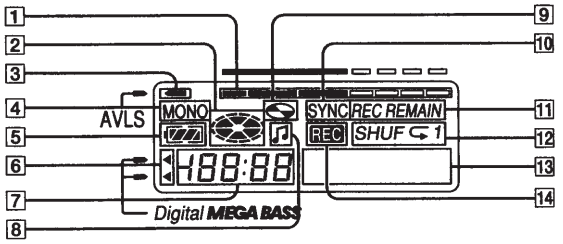
The recorder



1 Battery compartment (23)
2 MIC (PLUG IN POWER) jack (12)
3 REC (record) switch (7)
4 Display window (14, 16)
5 (OPTICAL) LINE IN jack (6, 11)
6 LINE OUT jack (17)
7 PHONES/REMOTE jack (8)
8 HOLD switch (17)
9 Digital MEGA BASS•AVLS button (at the bottom) (15, 16)
10 SYNCHRO REC (Synchronized-recording) switch (at the bottom) (11)

11 ⏸ (pause)•CAPS button (7, 9, 21)
12 ■ (stop)•CHARGE button (7, 9, 23)
13 ► (play)•ENTER button (7, 9, 18)
14 DC IN 4.5V jack
15 OPEN switch
16 VOL (volume) +/– buttons (9, 21)
17 ⏮ / ⏭ buttons
18 END SEARCH button (7)
19 T MARK (track mark)•CANCEL button (at the bottom) (19, 21)
20 MODE•DELETE button (at the bottom) (13, 15, 21)
21 DISPLAY•EDIT•INSERT button (at the bottom) (14,16,18, 21)

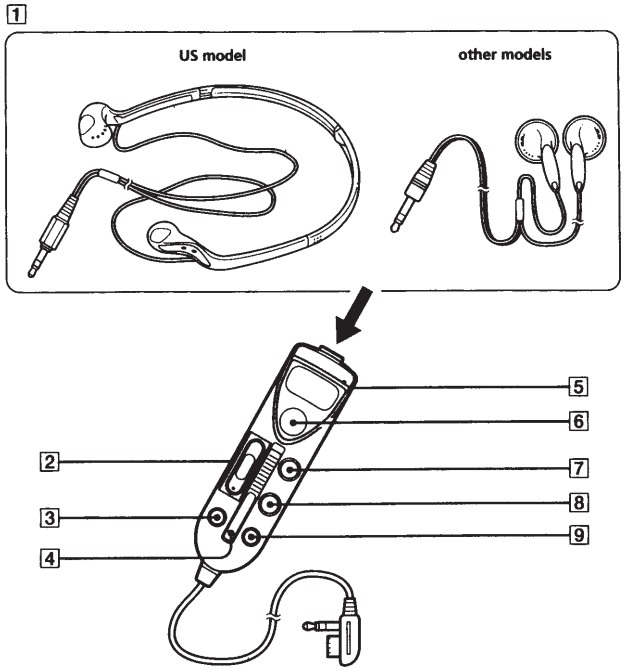
The display window



1 Level meter
Shows the level of the MD being played or recorded.
2 Disc indication
Shows that the disc is rotating for recording, playing or editing an MD.
3 ▬ mark: AVLS indication (16)
4 MONO (monaural) indication
5 Battery indication (23)
6 ◂ or ⁞ mark: MEGA BASS indication (15)
7 Time display (14, 16)
Shows the elapsed time of the track or MD being recorded or played.
8 ♪ mark (18, 21, 22)
Lights up when the track information is displayed or edited.
9 mark (19, 21, 22)
Lights up when the disc information is displayed or edited.
10 SYNC (Synchronized-recording) indication (11)

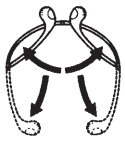
11 REMAIN/REC REMAIN (remaining time/tracks) indication (14, 16)
REMAIN lights up along with the remaining time of the track or disc, or remaining number of tracks.
REC REMAIN lights up along with the remaining time available on the MD for recording.
12 Play mode indication (15)
Shows the play mode of the MD.
13 Character information display
Displays the disc and track names, error messages, track numbers, etc.
14 REC indication (7)
Lights up while recording. Flashes when standing by for recording.

The headphones with a remote control



1 Headphones
Can be replaced with optional headphones.
2 VOL (volume) •POSITION +/– button (9, 21)
3 DELETE button (21)
4 HOLD switch (17)
5 ⏮ ►•⏭ button
6 ■ (stop)•ENTER button (7, 9, 18)
7 ⏸ (pause)•CAPS button (7, 9, 21)
8 T MARK•CANCEL button (18)
9 EDIT•INSERT button (18, 19, 21)

For customers in the United States
Unfold the supplied headphones as shown in the illustration below.



SECTION 2
SELF-DIAGNOSTIC

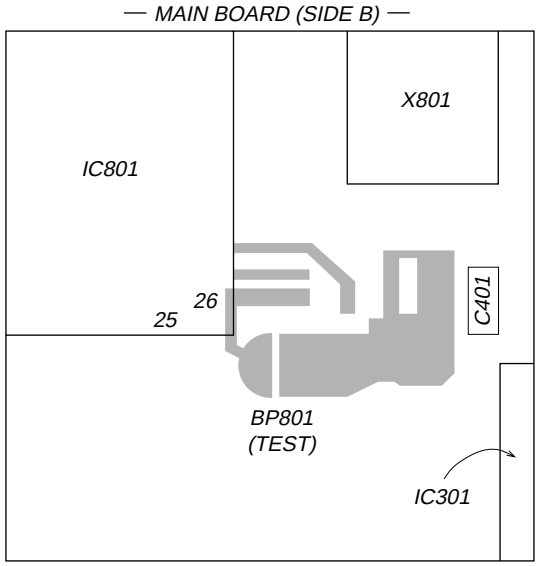
2-1. GENERAL

This set uses the self-diagnostic system in which if an error occurs in playback/recording mode, the error is detected by the model control and power control blocks of the microprocessor and information on the cause is stored as history in EEPROM.
By viewing this history in test mode, it helps you to analyze a fault and determine its location.

2-2. TEST MODE SETTING

There are two different methods to set the test mode:

① Short BP801 (TEST) on the main board with a solder bridge (connect pin ㉖ of IC801 to the ground). Then, turn on the power.

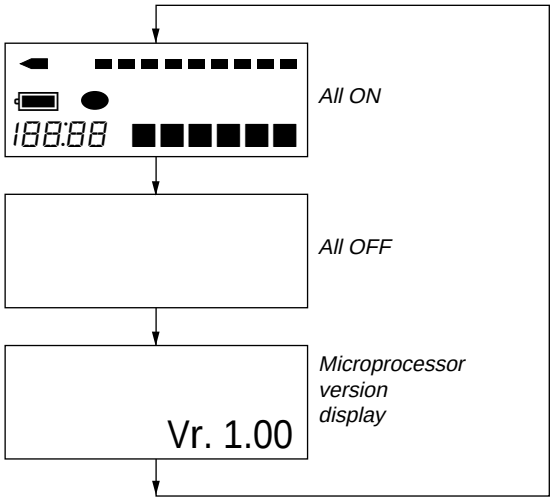


② In the normal mode, use the keys on the unit to perform the following operations:
Press and hold down ► and press the keys below in this turn:
▶▶| → ▶▶| → |◀◀ → |◀◀ → ▶▶| → |◀◀ → ▶▶| → |◀◀ → ❚❚ → ❚❚

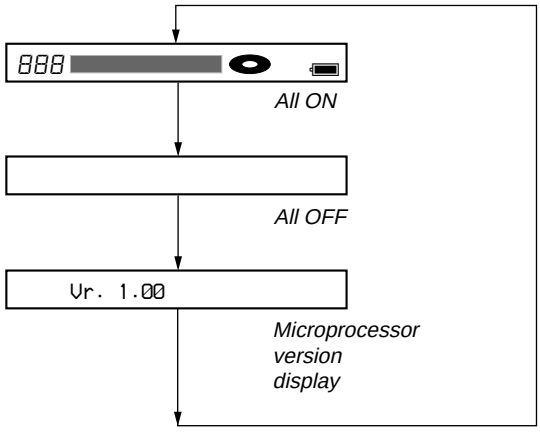
2-3. OPERATION IN TEST MODE SETTING

When the test mode is set, the LCD shows repeated cycles of the following display:

1) Unit LCD



2) Remote controller LCD



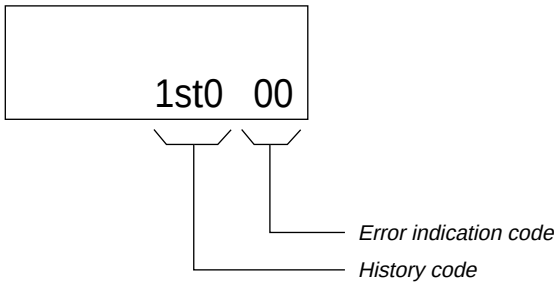
• Holding down ❚❚ allows the current display to be maintained while it being depressed.

2-4. RELEASING THE TEST MODE

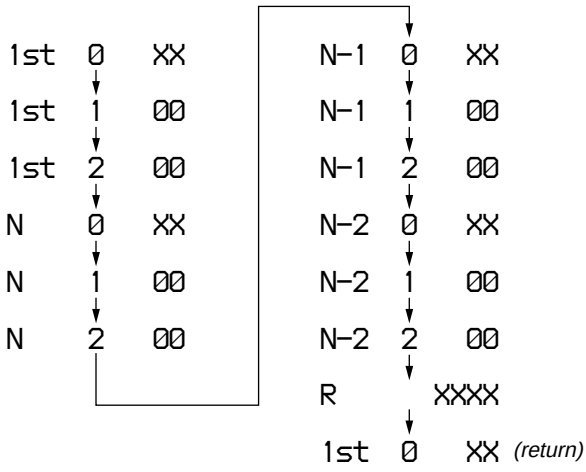
For test mode set with the method ①:
Turn off the power and open the solder bridge on BP801 on the main board.
For test mode set with the method ②:
Turn off the power.

2-5. SELF-DIAGNOSTIC MODE

1. Go into the test mode.
2. With the unit LCD indicators all flashing, press DISPLAY key to go into the self-diagnostic mode.



3. Then, each time ▶▶ key is pressed, the reference information display changes as given below.



• Press |◀◀ key to go back to the previous display.

• Description of History Codes

History code number	Description
1st 0	The first error
1st 1	00 indicated
1st 2	
N 0	The last error
N 1	00 indicated
N 2	
N-1 0	One error before the last.
N-1 1	00 indicated
N-1 2	
N-2 0	Two errors before the last.
N-2 1	00 indicated
N-2 2	
R	Total recording time *1)

*1) Total recording time
Total recording time is recorded in minutes as an index for load to the OP. It is recorded in hexadecimal format and up to 65,535 min. (about 886 discs of 74-minute disc) can be counted. It returns to "0000h" when recorder goes beyond this limit.
Example : REC 000A → Approx. 10 min.
REC 00A0 → Approx. 160 min.
REC 0A00 → Approx. 2,560 min.

• Description of Error Indication Codes

Problem	Indication code	Meaning of code	Description
No error	00		
Abnormal stop during recording	01	Servo error	Abnormal disc RPM. Focus out of alignment. Attempt to access an abnormal address.
	02	ADIP read error	Unable to read the ADIP address.
	03	Shock detected during write	Jumped by 1.5 tracks or more due to shock during write.
	04	Shock detected during laser down	Shock detected when laser was moving down.
Abnormal stop during playback	11	No focus applied	Focus could not be applied.
	12	CRC error	Unable to read the address.
	15	FG error	Abnormal rotation of disc.
Abnormal stop of recording/playback caused by power system	21	Lower voltage due to overload	Power voltage reduced due to overload.
	22	Momentary interruption	Momentary interruption detected.
	23	Lower power voltage in motor system	Power voltage for motor continuously reduced to less than 1V.
	24	Low power voltage in DSP	

2-6. CLEARING THE ERROR INDICATION CODE AND TOTAL RECORDING TIME

After repair, reset the error indication code.
Reset the total recording time when you have replaced the OP.

1. Go into the self-diagnostic mode. (See page 5.)
2. To reset the error indication code, slide REC ➞ key when the code is displayed.
   (All data including 1st, N , N-1 and N-2 are reset.)
3. To reset the total recording time, slide REC ➞ key when the time is displayed.

SECTION 3
DISASSEMBLY

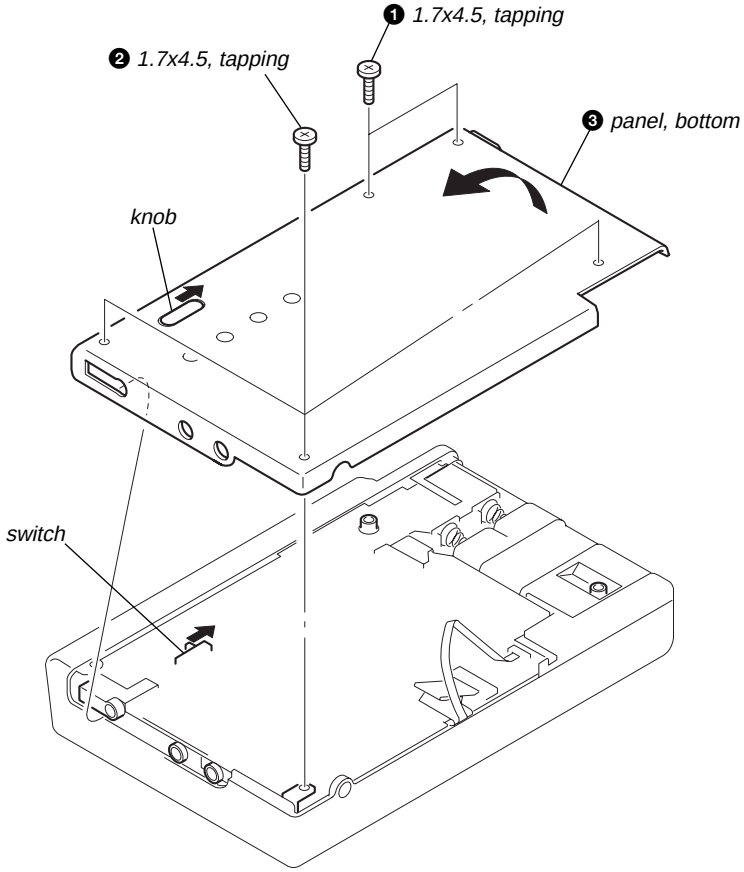
Note : This set can be disassemble according to the following sequence.

Set → Panel, Bottom → Panel (SV) Assy, Front → LCD Module

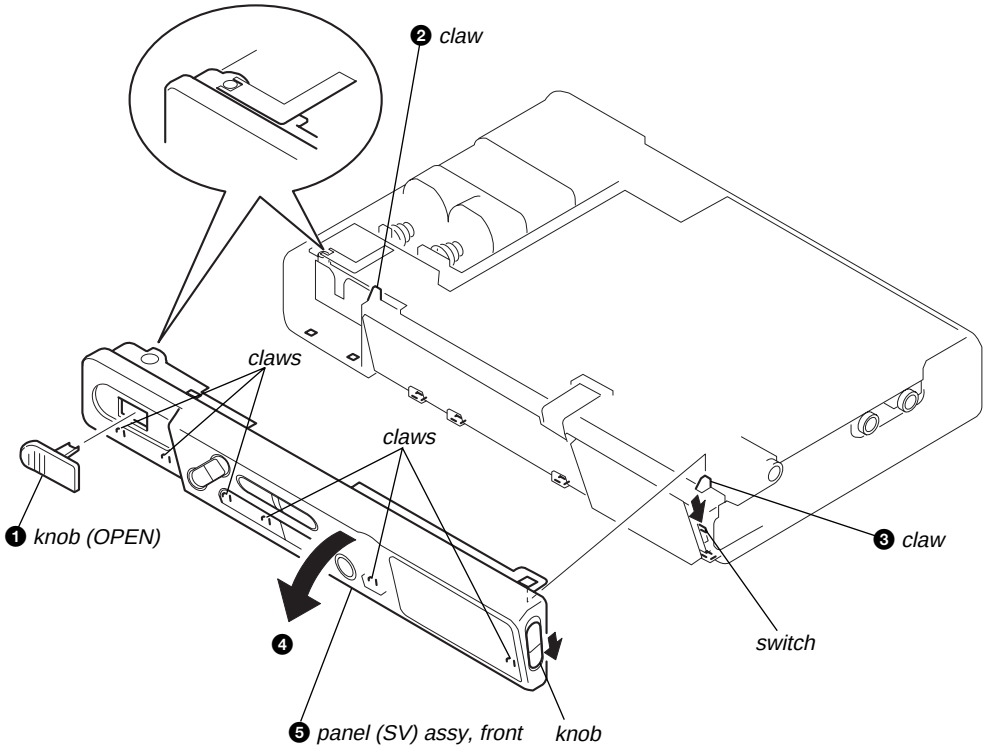
Connector → Main Board → Panel (SV) Assy, Upper → Cabinet (SV) Assy → OP Block Assy → Holder Assy

Note : Follow the disassembly procedure in the numerical order given.

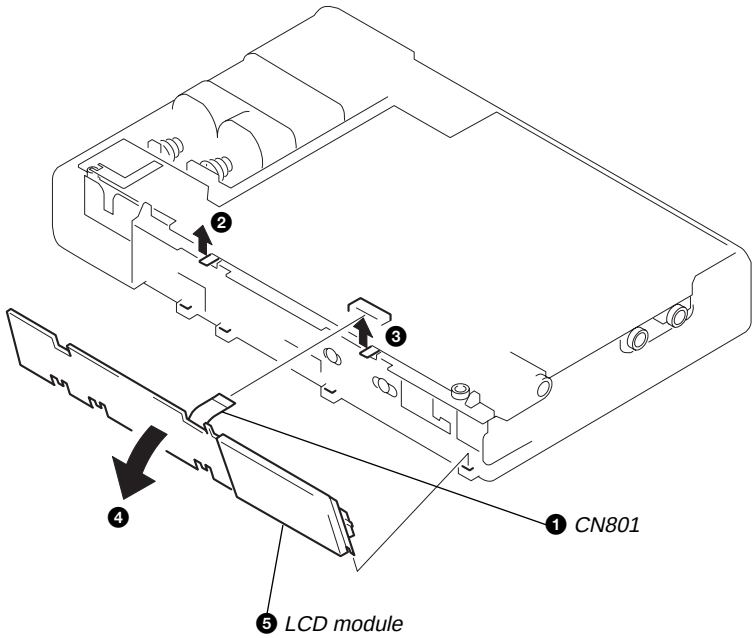
3-1. PANEL, BOTTOM



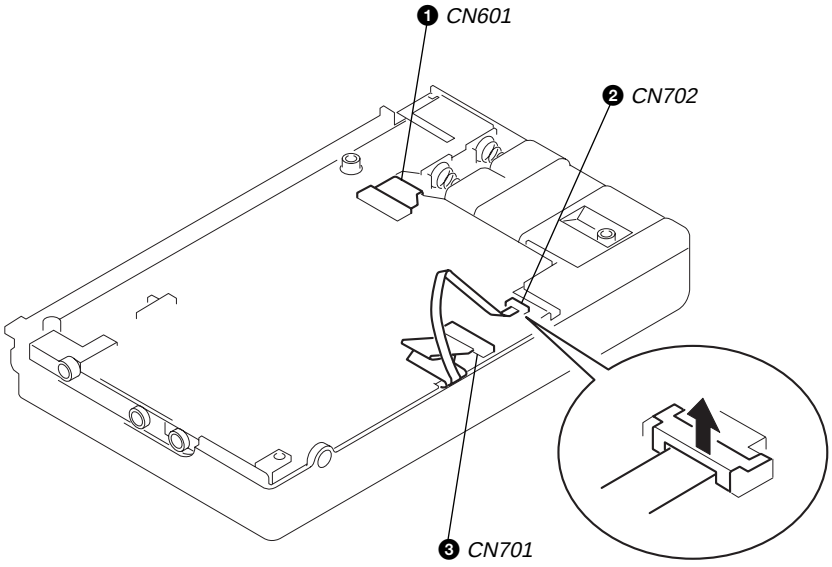
3-2. PANEL (SV) ASSY, FRONT



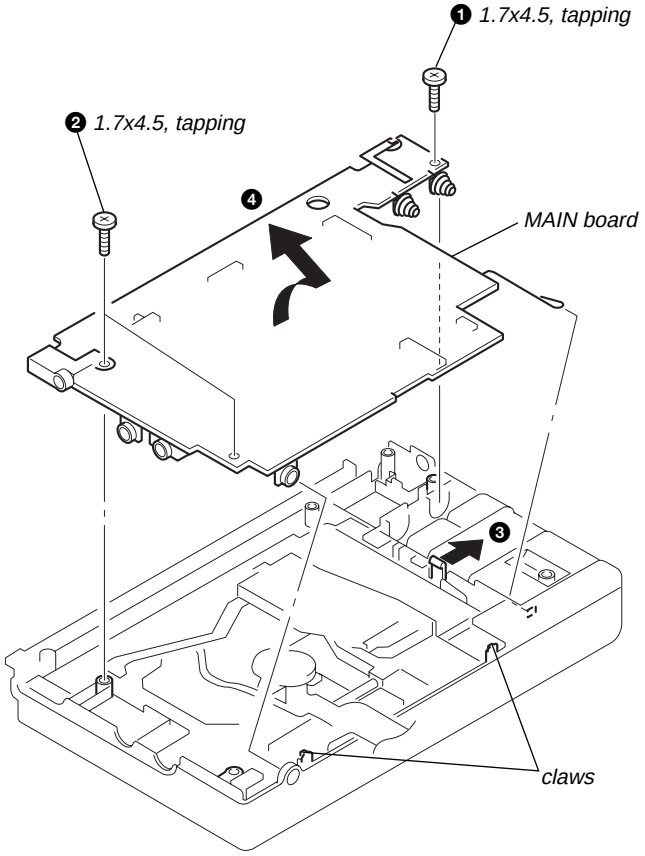
3-3. LCD MODULE



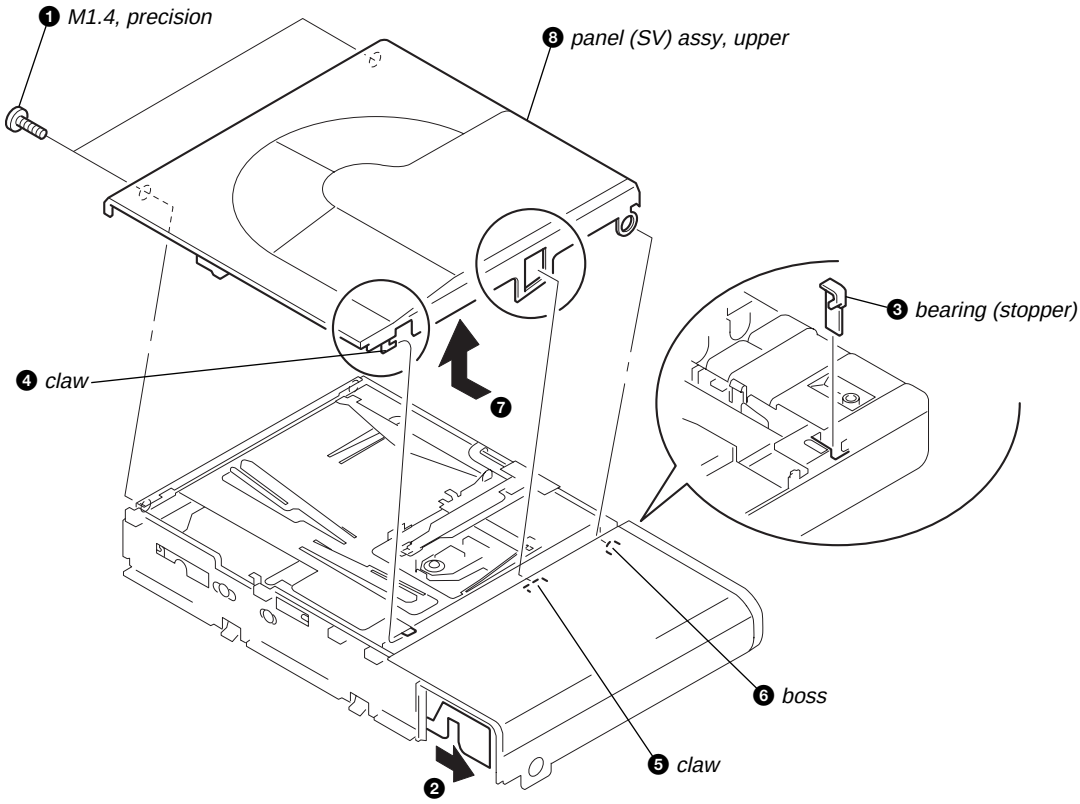
3-4. CONNECTOR



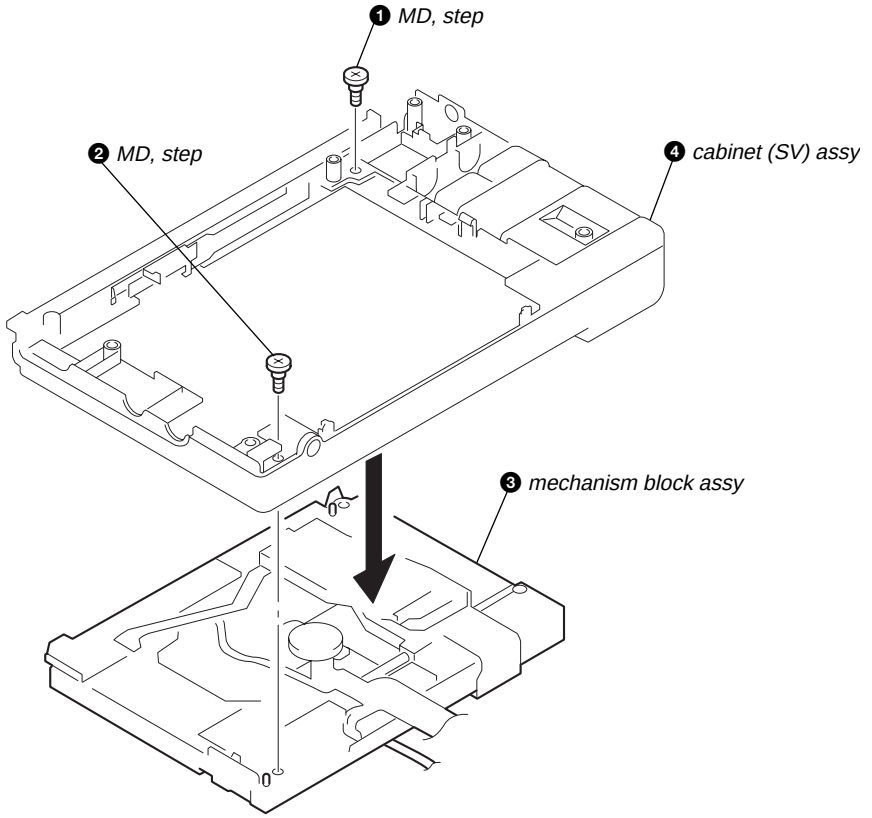
3-5. MAIN BOARD



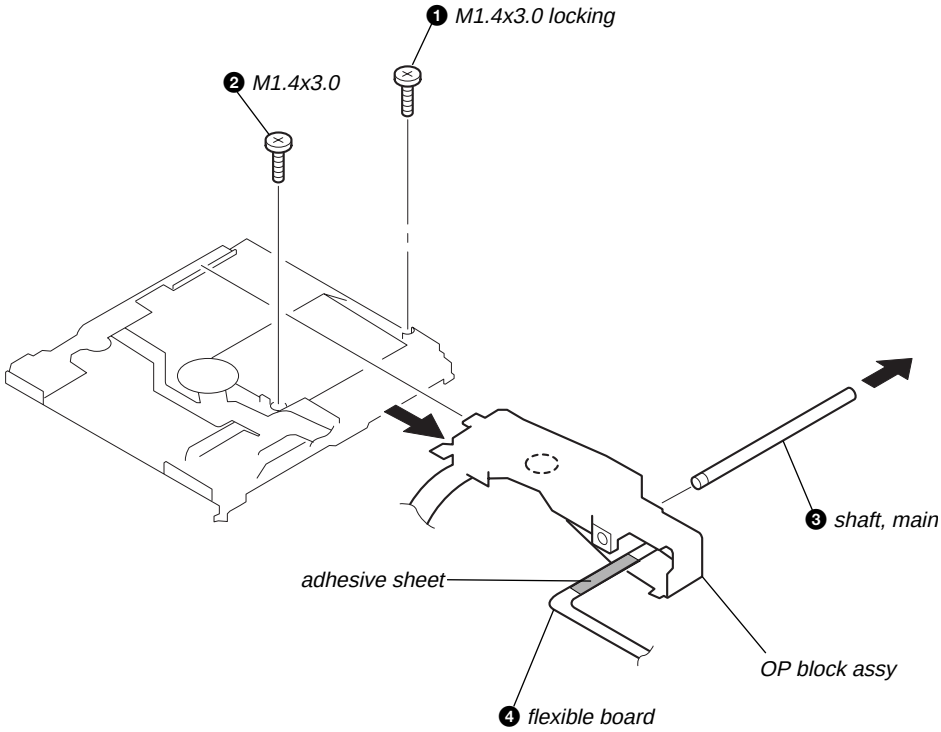
3-6. PANEL (SV) ASSY, UPPER



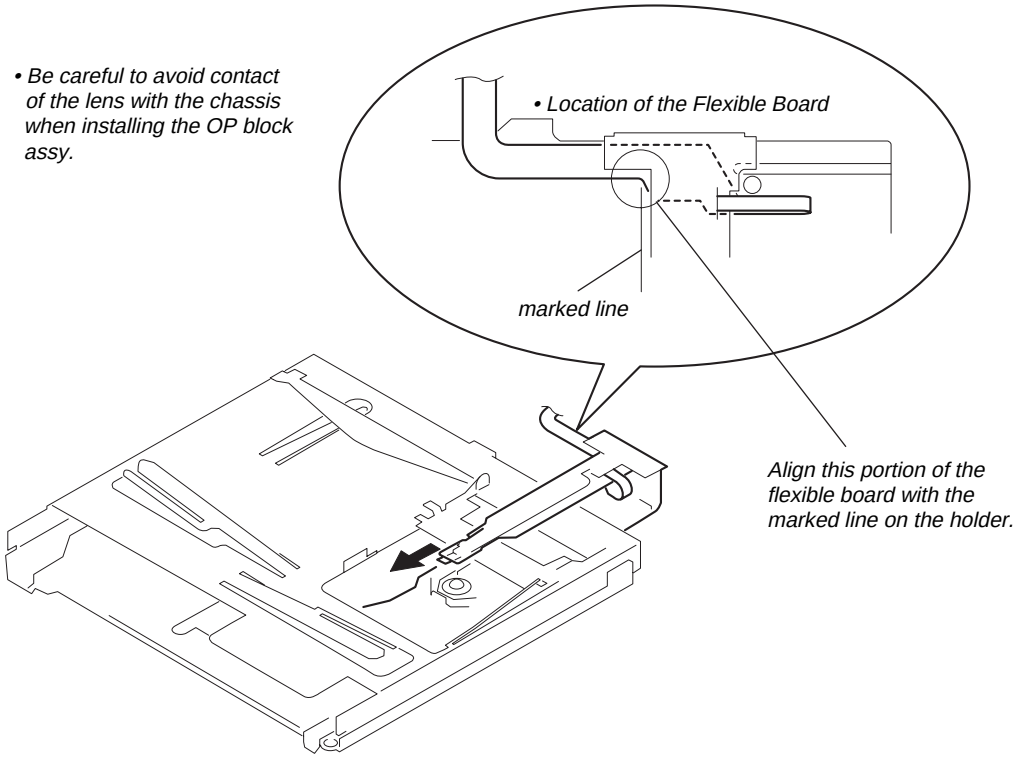
3-7. CABINET (SV) ASSY



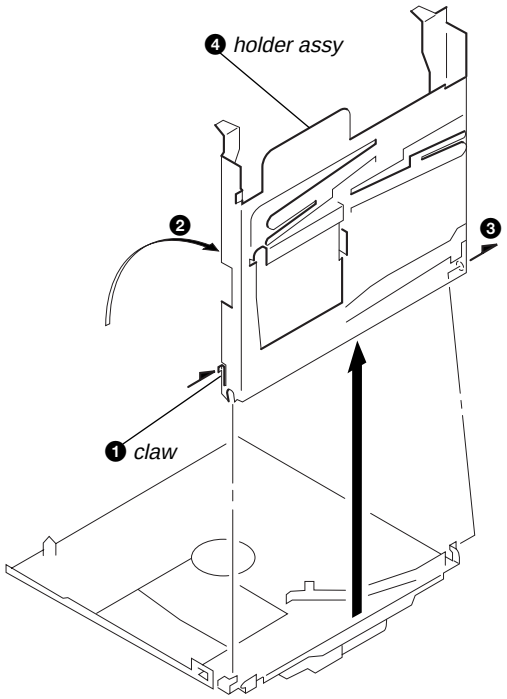
3-8. OP BLOCK ASSY



• Notes for Installation of the OP Block Assy


• Be careful to avoid contact of the lens with the chassis when installing the OP block assy.
• Location of the Flexible Board
marked line
Align this portion of the flexible board with the marked line on the holder.

3-9. HOLDER ASSY



SECTION 4
TEST MODE

4-1. GENERAL

This set provides the Overall adjustment mode (Assy mode) that allows CD and MO disk to be automatically adjusted when in the test mode. In this Assy mode, the system discriminates between CD and MO disk and then automatically perform adjustments for them in sequence. If a fault is found, the system displays its location. Also, the Servo mode allows each individual adjustment to be automatically adjusted.

4-2. TEST MODE SETTING

See page 5.

4-3. TEST MODE STRUCTURE

Test mode

- ▶▶I or VOLUME + key → Manual Mode
- VOLUME + key → Servo Mode / Audio Mode / Mechanism Mode / Power Mode
- I◀◀ or VOLUME − key → Overall Adjustment Mode (Assy Mode)
- MODE key → Hybrid Mode (ALL Mode)
- EDIT/ENTER key → Key Check Mode

4-4. MANUAL MODE

(1) Servo Mode

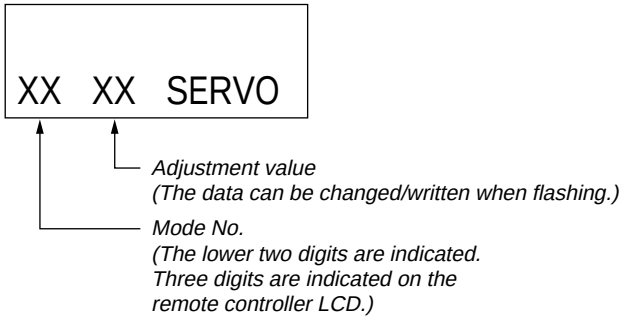
• How to Transfer in the Servo Mode:

Mode No.	Test Description	Check	Write
000	Servo mode		
010	Offset correction value indication		
011	VC offset correction		
012	Focus bias correction		
013	FE offset correction		
014	ABCD offset correction		
015	All servo ON		
016	Temperature indication		
020	Laser power adjustment		
021	Laser CD/MO read adjustment		○ (08)
022	Laser MO write adjustment		○ (4C)
023	Sled normal		○ (45)
024	Sled intermittent		○ (65)
025	Sled access		○ (30)
030	MO test adjustment		
031	MO focus search adjustment		
032	MO read EF balance adjustment		○ (0F)
033	MO read ABCD level		○ (07)
034	MO write EF balance adjustment		○ (10)
035	MO write ABCD level		○ (18)
036	Laser MO read adjustment		○ (08)
037	MO focus gain		○ (30)
038	MO tracking gain		○ (30)
039	MO focus bias	○	○ (0B)
040	Low reflection CD test adjustment		
041	Low reflection CD focus search adjustment		
042	Low reflection CD EF balance adjustment		○ (10)
043	Low reflection CD ABCD level		○ (06)
044	Laser low reflection CD read		○ (08)
045	Low reflection CD focus gain		○ (30)
046	Low reflection CD tracking gain		○ (30)
047	Low reflection CD focus bias	○	○ (00)
050	CD test adjustment		
051	CD focus search adjustment		
052	CD EF balance adjustment		○ (10)
053	CD ABCD level adjustment		○ (15)
054	Laser CD read		○ (08)
055	CD focus gain		○ (30)
056	CD tracking gain		○ (30)
057	CD focus bias	○	○ (00)
060	Recording test		
061	32 cluster full recording		
062	Recording shock		
063	32 cluster full playback		

Check : Mode to display error rate and cluster.
Write : Mode to permit adjustment (Default value given in parentheses).

1. Go into the test mode.
2. Press ▶▶I or VOLUME + key to set the servo mode.

Unit LCD display


XX XX SERVO
Adjustment value
(The data can be changed/written when flashing.)
Mode No.
(The lower two digits are indicated.
Three digits are indicated on the
remote controller LCD.)

3. Press the keys below to change the mode No.

▶ : Increases the one place.
■ : Sets the one place to 0.
This key brings the ten place to 0 if the one place is 0.

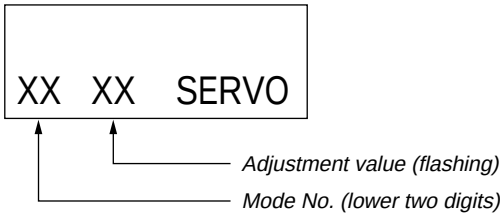
VOLUME + : Increases the ten place by 10 if the one place is 0. Increases the adjustment value if the one place is non-zero.

VOLUME − : Decreases the ten place by 10 if the one place is 0. Decreases the adjustment value if the one place is non-zero.

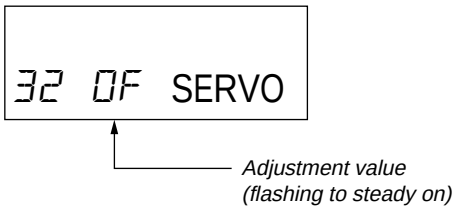
Note) Press the REC ⟶ key is the mode "33" to shift to the mode "34".
Press the ▶ key is the mode "34" to shift to the mode "35".

• How to Adjust in Servo Mode:

1. When the servo mode is set to the appropriate mode for each adjustment, the lower two digits of the mode No. and the value stored in EEPROM are displayed and flashing.



2. To perform automatic adjustment for an adjustment item with the mode number 030 to 047, press ▮▮ key.
   If the result of adjustment is OK, the adjustment value changes from flashing to steady on and it is automatically written to EEPROM.

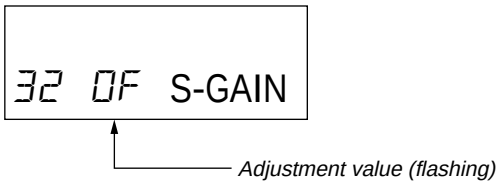


3. To perform manual adjustment, change the adjustment value with VOLUME + or − key, and press ▮▮ key to write it to EEPROM.

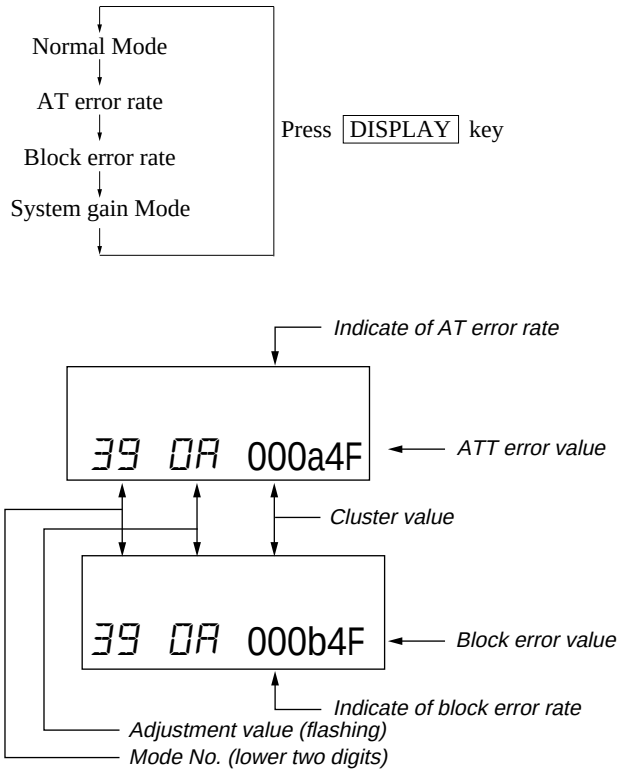
Note) Normally, automatic adjustment should be performed. Do not execute manual adjustment.

• System Gain Mode

1. This mode allows the system gain to be freely adjusted. Press DISPLAY key to enter this mode.



2. Increase or decrease the adjustment value with VOLUME + or − key.
3. Press DISPLAY or ■ key to return to the normal mode.
4. For the error rate display enabled:



Note) In normal service, do not adjust the system gain mode.

(2) Audio Mode

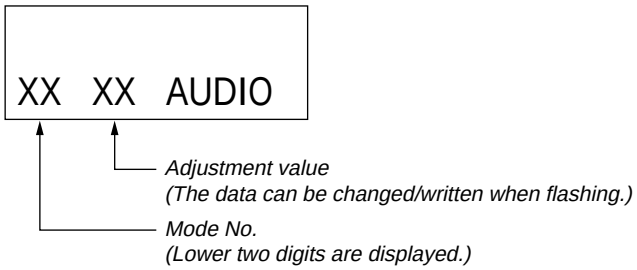
• How to Transfer in the Audio Mode

Mode No.	Test Description	Write	Change Description
100	Audio mode		
110	Audio playback		
111	L/R=1 kHz 0 dB	Playback VOL	HP output
112	L=1 kHz 0 dB	Playback VOL	HP output
113	R=1 kHz 0 dB	Playback VOL	HP output
114	L/R – ∞ dB	Playback VOL	HP output
115	L/R=1 kHz 0 dB & EVR max	Playback VOL	HP output
116	L/R=1 kHz 0 dB & AVLS on	Playback VOL	HP output
117	INFI ZERO & BEEP	Playback VOL	HP output
120	Audio recording test		
121 *1)	LINE manual recording	Recording VOL	HP output
	MIC manual recording		
122 *1)	DEMP LINE manual recording	Recording VOL	HP output
	DEMP MIC manual recording		
123 *1)	LINE automatic recording	HP VOL	HP output
	OPT automatic recording		
	MIC automatic recording		
124 *1)	DEMP LINE automatic recording	HP VOL	HP output
	DEMP OPT automatic recording		
	DEMP MIC automatic recording		
130	DIGITAL AGC ADJ1		
131	MIC UP SR	○ (30)	
132	MIC DOWN SR	○ (FA)	
133	MIC THD0	○ (D0)	
134	MIC GAIN	○ (00)	
135	MIC ATTACK	○ (A0)	
136	MIC RECOVER	○ (F8)	
137	MIC THD2	○ (F0)	
138	MIC GAIN2	○ (D0)	
139	MIC RTIME	○ (01)	
140	DIGITAL AGC ADJ2		
141	LINE UP SR	○ (17)	
142	LINE DOWN SR	○ (FF)	
143	LINE THD0	○ (D0)	
144	LINE GAIN	○ (0C)	
145	LINE ATTACK	○ (33)	
146	LINE RECOVER	○ (FB)	
147	LINE THD2	○ (E4)	
148	LINE GAIN2	○ (5F)	
149	LINE RTIME	○ (04)	
150	DIGITAL AGC ADJ3		
151	MAN UP SR	○ (C0)	
152	MAN DOWN SR	○ (40)	
153	AUTO THD3	○ (51)	
154	AUTO LMT UP SR	○ (FF)	
155	AUTO LMT DOWN SR	○ (E0)	
156	MAN THD3	○ (51)	
157	MANU LMT UP SR	○ (FF)	
158	MANU LMT DOWN SR	○ (A0)	
159	THD1	○ (1A)	

*1) The port is detected and the input is automatically selected.
Contents changed : Contents to be changed when VOLUME + or − key is pressed.
Write : Mode to permit adjustment
(Default value given in parentheses)

1. Go into the test mode.
2. Press ▶▶| key or VOLUME + key and VOLUME + key in this turn to set the audio mode.

Unit LCD display



3. Press the keys below to change the mode number.
   ► : Increases the one place.
   ■ : Sets the one place to 0.
   This key brings the ten place to 0 if the one place is 0.

VOLUME [+] : Increases the ten place by 10 if the one place is 0. Increases the adjustment value if the one place is non-zero.
VOLUME [–] : Decreases the ten place by 10 if the one place is 0. Decreases the adjustment value if the one place is non-zero.

• How to Adjust in the Audio Mode

1. When the audio mode is set to the appropriate mode for each adjustment, the lower tow digits of the mode No. and the value stored in EEPROM are displayed and flashing.
2. Change the adjustment value with VOLUME [+] or [–] key and press [❚❚] key to write the new value to EEPROM.

• How to Check in the Audio Mode

The audio mode allows the checks below to be performed:

1. For the mode numbers of 111 to 113, 115 and 116, pressing [❚❚] key will activate a beep. But for the mode number of 117, pressing [❚❚] key will not activate a beep. (No beep sounds when [HOLD] switch is put on.)
2. For the mode numbers of 121 to 124, pressing [Digital MEGA BASS] key will display the DBB mode for the adjustment value.
   1 : Mode 1
   2 : Mode 2
   13 : OFF
   (This will not be accepted when the LINE OUT jack is plugged. The display will be 13 : OFF when LINE OUT jack is plugged in Modes 1 and 2.)

(3) Mechanism Mode

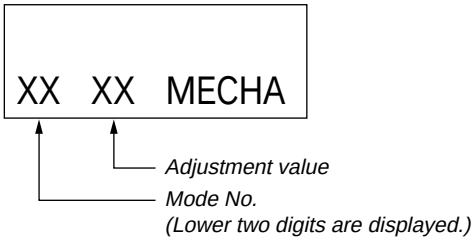
• How to Transfer the Mode in the Mechanism Mode:

Mode No.	Test Description	Operation
200	FUNCTION	Stepper control
210	MECHA test	Initial position return
211	HEAD adjustment	Operation variation changing (19)
212	REC position	Recording head descent
220	RESUME	Resume
221	RESUME CLEAR	Resume clear/initialization

( ) : Default value

1. Go into the test mode.
2. Press [►►I] or VOLUME [+] and VOLUME [+] and VOLUME [+] in this turn to set the mechanism mode.

Unit LCD display



3. Press the keys below to change the mode No.
   ► : Increases the one place.
   ■ : Sets the one place to 0.
   This key brings the ten place to 0 if the one place is 0.

VOLUME [+] : Increases the ten place by 10 if the one place is 0. Increases the adjustment value if the one place is non-zero.
VOLUME [–] : Decreases the ten place by 10 if the one place is 0. Decreases the adjustment value if the one place is non-zero.

• How to Check in the Mechanism Mode

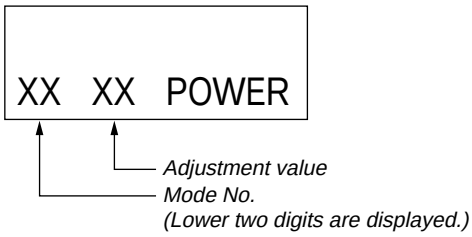
The mechanism mode allows the checks below to be performed:

1. For the mode numbers of 200, 210 to 212, 220 and 221, pressing [I◄◄] key will move the optical pickup to the inner radius. Pressing [►►I] key will move the pickup to the outer radius.
2. For the mode numbers of 211 and 212, pressing [❚❚] key will start aging. Pressing [■] key will stop aging.
   • Mode No. 211 ... Sled aging with stepper at playback position.
   • Mode No. 212 ... Sled aging with stepper at recording position.
3. With the mode number 210 selected, pressing [❚❚] key will start aging with steeper at between home and recording positions. [■] key will stop aging.

(4) Power Mode

Mode No.	Test Description	Indication value	Remark
300	POWER test		
310	POWER SUPPLY		
311	DC IN	+B voltage value	
320	CHG TEST		
321	Charging start		
322	BATT under	CHGMNT voltage value	
323	BATT under	+B CHGMNT voltage value	

1. Go into the test mode.
2. Press ▶▶| key or VOLUME + and VOLUME + and VOLUME + and VOLUME + in this turn to set the power mode.



3. Press the keys below to change the mode No.

▶ : Increases the one place.
■ : Sets the one place to 0.
This key brings the ten place to 0 if the one place is 0.
VOLUME + : Increases the ten place by 10 if the one place is 0.
Increases the adjustment value if the one place is non-zero.
VOLUME – : Decreases the ten place by 10 if the one place is 0.
Decreases the adjustment value if the one place is non-zero.

Note) With the mode number 310 selected, pressing ▶ key will transfer to the mode number (311) for the currently operating power.
With the mode number 300 selected, pressing ❚❚ key will set the sleep mode. Pressing ■ key will release it.

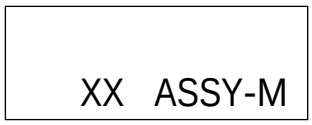
• How to Check in the Power Mode

1. For the mode numbers of 311, the voltage of the currently operating power is displayed.

4-5. OVERALL ADJUSTMENT MODE (ASSY MODE)

• How to Adjust in Assy Mode

1. Go into the test mode.
2. Press |◀◀ or VOLUME – key.

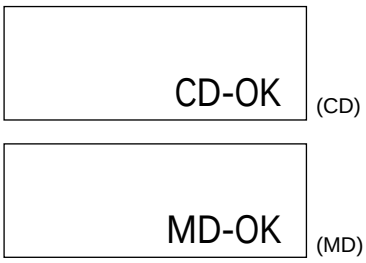


3. Insert the test CD (TDYS-1) or an available SONY CD.
4. Press ▶ key. The system discriminates between CD and MO and performs automatic adjustment for CD.

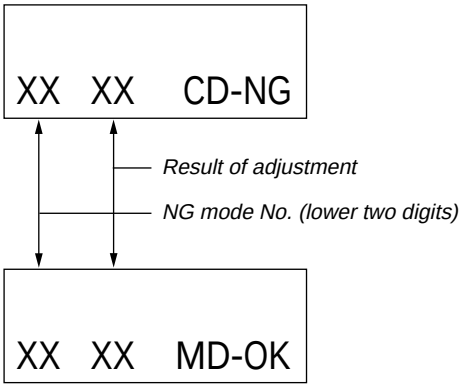
• CD Automatic Adjustment

Mode No.	Adjustment Description
052	CD EF balance adjustment
053	CD ABCD level adjustment
055	CD focus gain
056	CD tracking gain
057	CD focus bias

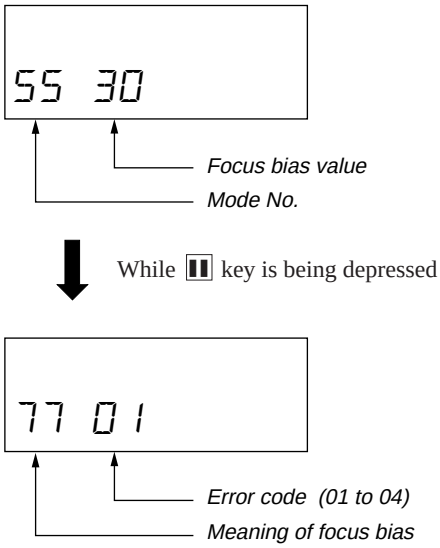
5. If the result of automatic adjustment is OK, the following display appears:



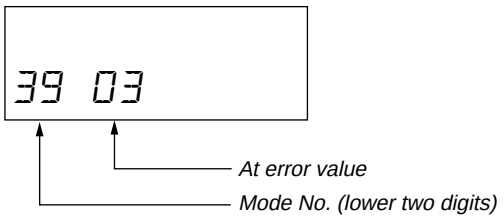
6. If the result of automatic adjustment is NG, the following display appears:



* For the mode numbers of 039 and 057, if the focus bias value is NG, the following display is repeated:

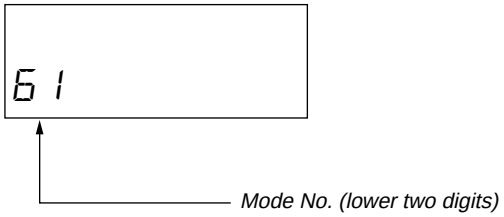


* For the mode numbers of 039 and 061, if the At error rate is NG, the following display is repeated:



7. If NG, set the servo mode. Perform automatic adjustment for the items not accepted (see the servo mode).

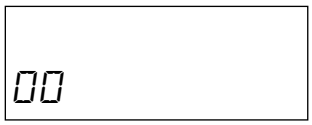
8. Insert a MO disk.
9. Press ► key. The system discriminates between CD and MO and performs automatic adjustment for the MO disk.



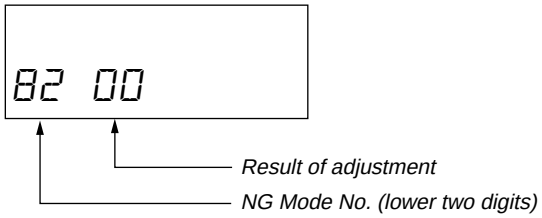
• MO Automatic Adjustment

Mode No.	Adjustment Description
032	MO read EF balance adjustment
033	MO read ABCD level
034	MO write EF balance adjustment
035	MO write ABCD level
037	MO focus gain
038	MO tracking gain
061	32 cluster full recording
062	Recording shock
063	32 cluster full playback
039	MO focus bias
042	Low refrection CD EF balance adjustment
043	Low refrection CD ABCD level
044	Laser low reflection CD read
046	Low refrection CD tracking gain

10. If the result of automatic adjustment is OK, the following display appears:



11. If the result of automatic adjustment is NG, the following display appears:



12. If NG, set the servo mode. Perform automatic adjustment for the items not accepted (see the servo mode).

4-6. HYBRID MODE, KEY CHECK MODE

These modes are not used in normal service.

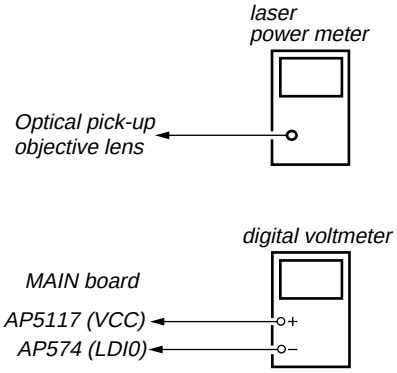
SECTION 5
ELECTRICAL ADJUSTMENTS

PRECAUTIONS FOR ADJUSTMENT

1) Perform all adjustments in the order given in the test mode. After adjusting, exit the test mode.
2) Use the following tools and measuring instruments.
   - Test CD TDYS-1 (Part No. : 4-963-646-01)
   - Recorded MO disk PTDM-1 (Part No. : J-2501-054-A)
   - Laser power meter LPM-8001 (Part No. : J-2501-046-A)
   - Oscilloscope (Frequency band above 40 MHz. Perform the calibration of probe first before measuring.)
   - Digital voltmeter
3) Unless specified othewise, supply DC 4.5V from the DC IN 4.5V jack.
4) Swtich, knob positions
   HOLD switch ..... OFF
   AVLS switch ..... NORM

LASER POWER CHECK

Connection :



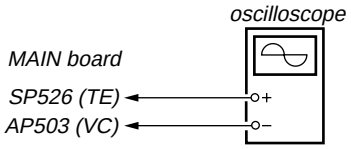
Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the laser power adjustment mode (Mode : 020) using the VOLUME + or – key.
3. Press the ⏮ key and move the optical pick-up to the inner most circumference.
4. Open the cover and set the laser power meter on the objective lens of the optical pick-up.
5. Press the ► key, and set the laser CD/MO read adjustment mode (Mode : 021).
6. Check that the laser power meter reading is 0.85 ± 0.085 mW.
7. Check that the voltage between AP5117 (VCC) and AP574 (LDI0) at this time is below 40 mV.
8. Press the ► key, and set the laser MO write adjustment mode (Mode : 022).
9. Check that the laser power meter reading is 6.8 ± 0.68 mW.
10. Press the ❚❚ key to finalize the adjustment data.
11. Check that the voltage between AP5117 (VCC) and AP574 (LDI0) at this time is below 80 mV.
12. Press the ■ key.
13. Exit the test mode.

Adjustment Location : See page 19.

MO TRAVERSE ADJUSTMENT

Connection :



Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the MO test adjustment mode (Mode : 030) using the VOLUME + or – key.
3. Press the ⏮ or ⏭ key and move the optical pick-up to the center circumference.
4. Insert any MO disk available on the market.
5. When the ► key is pressed, the MO read EF balance adjustment mode (Mode : 032) will be set after MO focus search adjustment mode (Mode : 031).
6. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.
7. Slide the REC key and set the MO write EF balance adjust ment mode (Mode : 034).
8. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

(Traverse waveform)

Specification : A = B, C ≧1.0 Vp-p

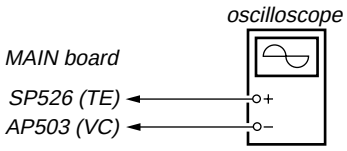
9. Check that the traverse level at this time is above 1.0 Vp-p.
10. Press the ■ key.
11. Exit the test mode.

Note) Using a recorded disk in this adjustment will erase the data.

Adjustment Location : See page 19.

LOW REFLECTION CD TRAVERSE ADJUSTMENT

Connection :



Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the low reflection CD test adjustment mode (Mode : 040) using the VOLUME + or – key.
3. Insert any MO disk available on the market.
4. When the ► key is pressed, the low reflection CD EF balance adjustment mode (Mode : 042) will be set after low reflection CD focus search adjustment mode (Mode : 041).
5. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

(Traverse waveform)

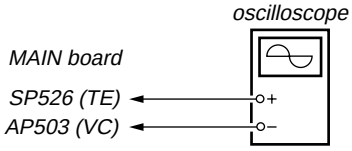
Specification : A = B, C ≧0.9 Vp-p

6. Check that the traverse level at this time is above 0.9 Vp-p.
7. Press the ■ key.
8. Exit the test mode.

Adjustment Location : See page 19.

CD TRAVERSE ADJUSTMENT

Connection :



Adjustment Method :

1. Set the servo mode of the test mode (Mode : 000).
2. Press the ► key, and set the CD test adjustment mode (Mode : 050) using the VOLUME + or – key.
3. Press the |◄◄ or ►►| key and move the optical pick-up to the center circumference.
4. Insert a test CD (TDYS-1).
5. When the ► key is pressed, the CD EF balance adjustment mode (Mode : 052) will be set after CD focus search adjustment mode (Mode : 051).
6. Press the ❚❚ key to perform automatic adjustment, and check that the traverse waveform is symmetrical at the top and bottom.

(Traverse waveform)

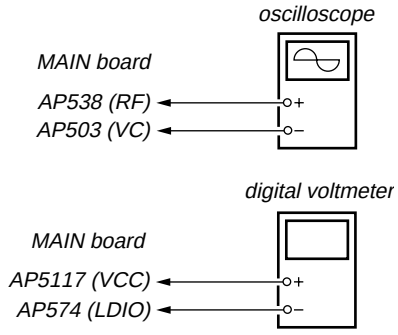
Specification : A = B, C ≧1.0 Vp-p

7. Check that the traverse level at this time is above 1.0 Vp-p.
8. Press the ■ key.
9. Exit the test mode.

Adjustment Location : See page 19.

CD RF LEVEL CHECK

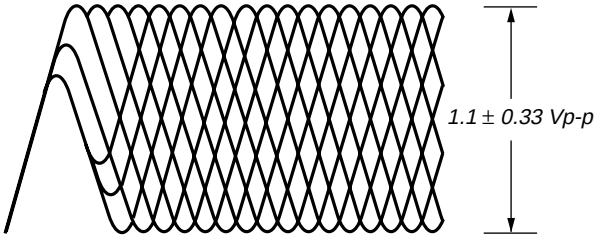
Connection :



Adjustment Method :

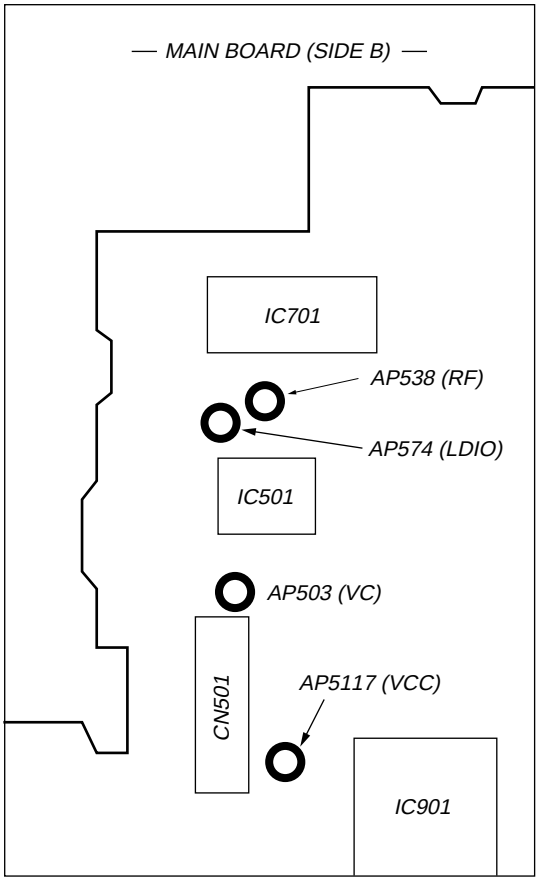
1. Set the servo mode of the test mode (Mode : 000).
2. Press the [►] key, and set the CD test adjustment mode (Mode : 050) using the VOLUME [+] or [–] key.
3. Press the [|◄◄] or [►►|] key and move the optical pick-up to the center circumference.
4. Insert a test CD (TDYS-1).
5. When the [►] key is pressed, the CD EF balance adjustment mode (Mode : 052) will be set after CD focus search adjustment mode (Mode : 051).
6. When the [►] key is pressed, the CD ABCD level adjustment mode (Mode : 053) is set.
7. Press the [II] key to perform automatic adjustment, and check that the RF level is 1.1 ± 0.33 Vp-p.

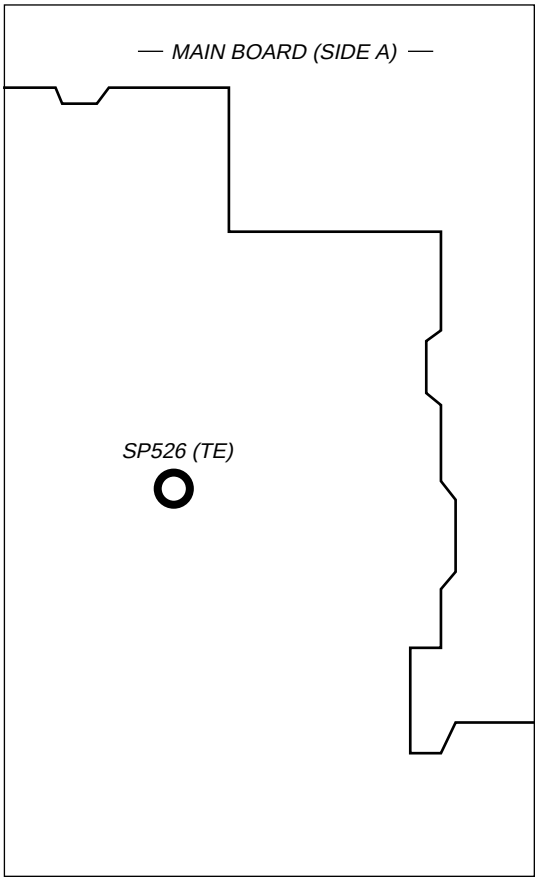
(RF waveform)



8. Check that the voltage between AP5117 (VCC) and AP574 (LDIO) and at this time is below 40 mV.
9. Press the [■] key.
10. Exit the test mode.

Adjustment Location :





SECTION 6
DIAGRAMS

6-1. IC PIN DESCRIPTIONS

• IC601 CXD2652AR (DIGITAL SERVO, ENC/DEC & ATRAC MEMORY CONTROLLER)

Pin No.	Pin name	I/O	Pin Description
1	MNT 0	O	Traverse count signal output.
2	MNT 1	O	Track jump detect output.
3	MNT 2	—	Not used (Open).
4	MNT 3	O	Focus OK signal output.
5	SWDT	I	Inputs write data signal from system control (IC801).
6	SCLK	I	Inputs serial clock signal from system control (IC801).
7	XLAT	I	Inputs serial latch signal from system control (IC801).
8	SRDT	O	Outputs write data signal to system control (IC801).
9	SENS	O	Outputs internal status (SENS) to system control (IC801).
10	XRST	I	Inputs reset signal from system control (IC801). L : Reset
11	SQSY	O	Output subcode Q sync (SCOR) to system control (IC801). Outputs “L” every 13.3 msec. Outputs “H” at all most mostly.
12	DQSY	O	Outputs digital-in U-bit CD format subcode Q sync (SCOR) to system control (IC801). Outputs “L” every 13.3 msec. Outputs “H” at all most mostly.
13	WRPWR	I	Inputs laser power switching signal from system control (IC801).
14	NC	—	Not used (Open).
15	TX	I	Input of write data taransmission timing from system control (IC801). Also used as magnetic field head ON/OFF output.
16	OSC1	O	Clock output (22.5 MHz).
17	OSC0	I	Clock input (22.5 MHz).
18	XTSL	—	Not used (Fixed at “L”)
19	NC	—	Not used (Connect to ground).
20	RVSS	—	Connect to ground.
21	DIN	I	Digital audio signal input pin (For optical input).
22	NC	—	Not used (Open).
23	ADDT	I	Audio data input from A/D converter (IC301).
24	DATA	O	Monitor/decode audio data output to A/D converter (IC301).
25	ALRCK	O	L/R clock output to D/A converter (IC301).
26	ABCK	O	Bit clock signal output to A/D, D/A converter (IC301).
27	FS256	O	11.2896 MHz clock output (MCLK).
28	DV_{DD}	—	Power supply (+2.8 V) for digital.
29 – 39	A00 – A08, A10, A11	O	Address signal output to DRAM (IC602).
40	DVSS	—	Ground terminal.
41	XOE	O	Output enable contol signal output to DRAM (IC602).
42	XCAS	O	Column address strobe singal output to DRAM (IC602).
43	A09	O	Address signal output to DRAM (IC602).
44	XRAS	O	Row address strobe signal output to DRAM (IC602).
45	XWE	O	Read/write control signal output to DRAM (IC602).
46 – 49	D0 – D3	I	Data signal input from DRAM (IC602).
50	MVCI	—	Not used (Connect to ground).
51	ASYO	O	Playback EFM full-swing output (L : VSS, H : VDD).
52	ASYI	I	Playback EFM asymmetry comparate voltage input.
53	AVDD	—	Power supply (+2.8 V) for analog.
54	BIAS	I	Playback EFM asymmetry circuit constant current input.
55	RFI	I	Inputs playback EFM RF signal from RF amplifier (IC501).

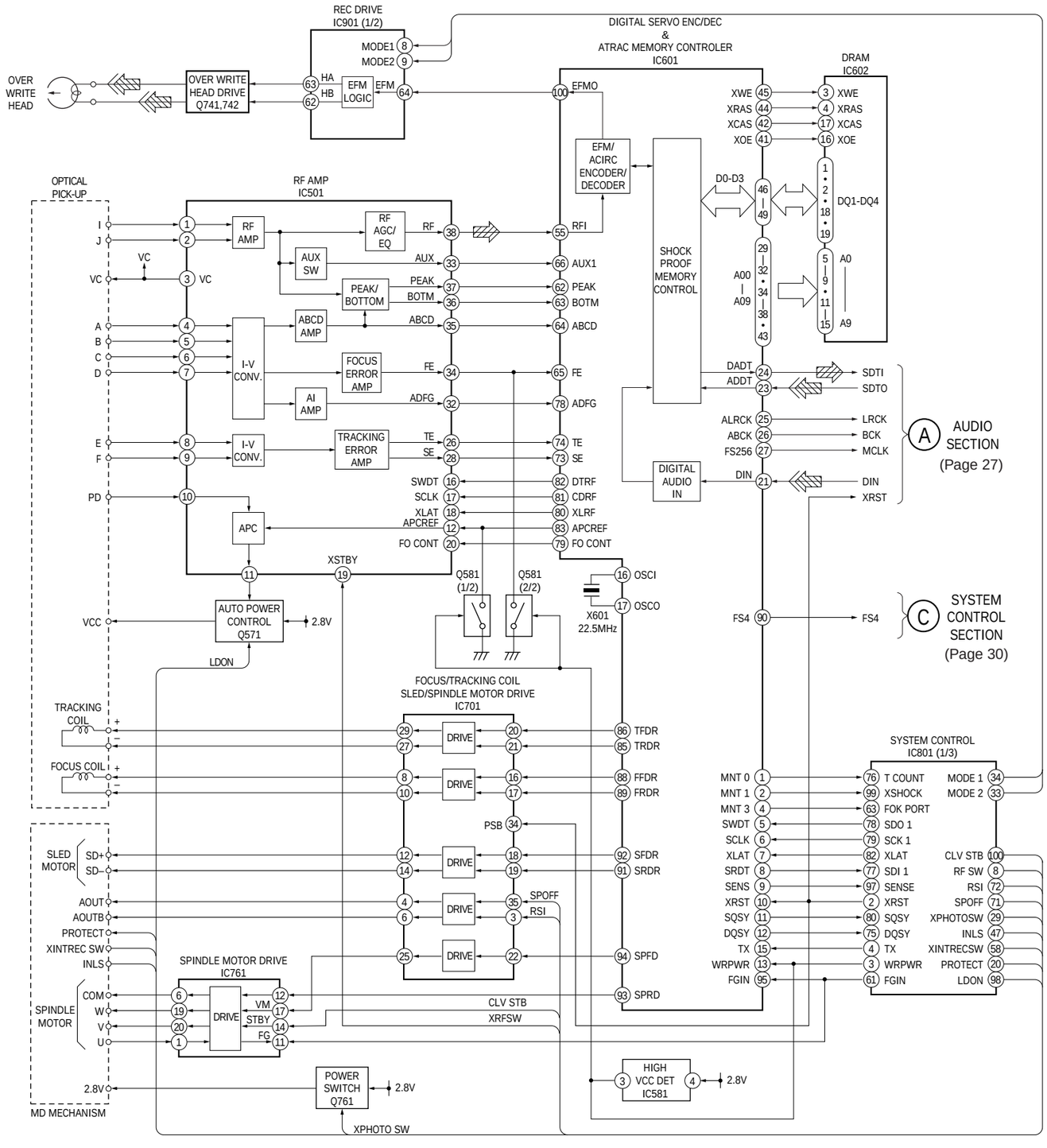
Pin No.	Pin name	I/O	Pin Description
56	AVSS	—	Ground terminal.
57	PDO	—	Not used (Open).
58	PCO	O	Decoder PLL master clock PLL phase comparison output.
59	FILI	I	Decoder PLL master clock PLL filter input.
60	FILO	O	Decoder PLL master clock PLL filter output.
61	CLTV	I	Decoder PLL master clock PLL VCO control voltage input.
62	PEAK	I	Inputs peak hold signal for light amount signal from RF amplifier (IC501).
63	BOTM	I	Inputs bottom hold signal for light amount signal from RF amplifier (IC501).
64	ABCD	I	Light amount signal from RF amplifier (IC501).
65	FE	I	Input focus error signal from RF amplifier (IC501).
66	AUX1	I	Input of auxiliary signal from RF amplifier (IC501).
67	VC	I	Input of middle point voltage (+1.4 V) from RF amplifier (IC501).
68	ADIO	—	Not used (Open).
69	AVDD	—	Power supply (+2.8 V) for analog.
70	ADRT	—	Not used (Connect to +2.8 V).
71	ADRB	—	Not used (Connect to ground).
72	AVSS	—	Ground terminal.
73	SE	I	Input of sled error signal from RF amplifier (IC501).
74	TE	I	Input of tracking error signal from RF amplifier (IC501).
75	AUX2	—	Not used (Connect to +2.8 V).
76	DCHG	—	Not used (Connect to +2.8 V).
77	APC	—	Not used (Connect to +2.8 V).
78	ADFG	I	Input of ADIP dual FM signal from RF amplifier (IC501) (22.05 kHz ± 1 kHz). (TTL Schmit input)
79	FO CONT	O	Focus control output to RF amplifier (IC501).
80	XLRF	I	Latch signal input from RF amplifier (IC501).
81	CKRF	O	RFCK clock (7.35 kHz) signal output.
82	DTRF	I	Serial data input from RF amplifier (IC501).
83	APCREF	I	Laser power setting signal input.
84	LDDR	—	Not used (Open).
85	TRDR	O	Tracking servo drive signal output (–).
86	TFDR	O	Tracking servo drive signal output (+).
87	DVDD	—	Power supply (+2.8 V) for digital.
88	FFDR	O	Focus servo drive signal output (+).
89	FRDR	O	Focus servo drive signal output (–).
90	FS4	O	176.4 kHz clock signal output (MCLK).
91	SRDR	O	Sled servo drive signal output (–).
92	SFDR	O	Sled servo drive signal output (+).
93	SPRD	O	Spindle servo drive signal output (–).
94	SPFD	O	Spindle servo drive signal output (+).
95	FGIN	I	FG signal input from spindle motor driver (IC761).
96	TEST1	—	Not used (Connect to ground).
97	TEST2	—	Not used (Connect to ground).
98	TEST3	—	Not used (Connect to ground).
99	DVSS	—	Ground terminal.
100	EFMO	O	EFM recording signal output.

• IC801 CXP740010 (SYSTEM CONTROL)

Pin No.	Pin name	I/O	Pin Description
1	CLKCS	O	Not used (Chip select output to real time clock).
2	XRST	O	Reset output. L : Reset
3	WRPWR	O	Laser power switching signal output.
4	TX	O	Write data transfer timing output.
5	SDI2	I	Serial data input.
6	SDO2	O	Serial data output.
7	SCK2	O	Serial clock output.
8	RFSW	O	Power control output.
9	SSB	I/O	SSB data signal input and output.
10	SSB SCK	I/O	SSB clock signal input and output. (Not used (Open).)
11	DTCK	I/O	Remote control data signal input/output.
12	SPCK	—	Not used (Open).
13	WP	I	Wake-up signal input from remote control key and this unit key.
14	OPEN	I	Detecting switch for opening and closing of the upper cover. L : Close
15	CLOCK	I	Not used (CLOCK SET switch input).
16	NI MH CHG	O	NI MH charge control output.
17	SLEEP	O	Sleep signal output.
18	T.MARK	I	T.MARK (Track mark) switch input.
19	REC	I	Not used (REC switch input).
20	PROTECT	I	Disc write protect switch. H : Protect
21	HOLD	I	HOLD switch input (This unit). L : HOLD
22	SYNC REC	I	SYNCHRO REC switch input.
23	D. B. B	I	DIGITAL MEGA BASS slide switch input.
24	XLINEDET	I	LINE IN (OPTICAL) detection input. L : LINE IN
25	INMU1	O	INMU signal output.
26	XTEST	I	Test mode terminal. L : Test mode
27	XDCIN	I	Not used (Open). (DC input detect. L : DC IN)
28	KANA SE L	—	Not used (Open).
29	XPHOTO SW	O	ON/OFF control signal output of PHOTO circuit.
30	XP CONT	—	Not used (Open). (Power control output. L : ON)
31	X2VCONT	—	Not used (Open). (Outputs H while operating with a lithium battery. 2V power control signal output. L : ON)
32	XREC LED	—	Not used (Open). (REC LED control. L : ON)
33	MODE2	O	REC drive (IC901) control signal output.
34	MODE1	O	
35	XNIMH CHG	—	Not used (Open). (Battery charger control signal output. L : Charge)
36	XLCD ON	O	LCD ON/OFF control. L : ON
37	INMU0	O	INMU signal output.
38	MRST	I	Microprocessor reset input.
39	V_{SS}	—	Ground.
40	XTAL	—	System clock (12 MHz).
41	EXTAL	—	System clock (12 MHz).
42	LCD DS	O	LCD communication strobe signal output to LCD driver.
43	LCD XC D	O	Com/data select signal output.
44	LCD DATA	O	LCD data output.
45	LCD SCK	O	Serial clock output.
46	CHG MNT	I	Battery charge voltage minitor input.
47	INLS	I	Detecting switch for internal circuit of sleding. L : Internal circuit
48	HIDC MNT	I	Voltage monitor DC input.
49	KEY R	I	Remote control key input.

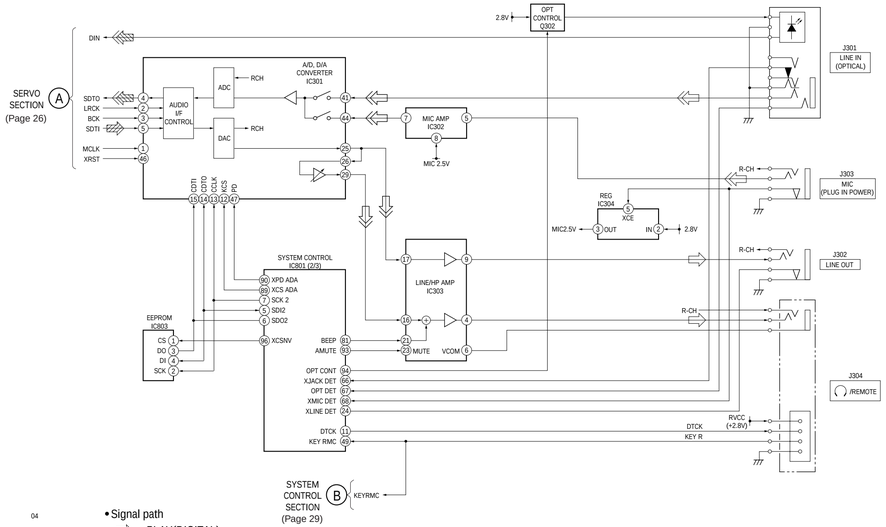
Pin No.	Pin name	I/O	Pin Description
50	AVSS	—	Ground terminal for A/D converter.
51	AVREF	I	A/D converter reference voltage input.
52	AVDD	—	A/D converter power supply terminal.
53	VLG2-MNT	I	DSP power monitor signal.
54	TEMP	I	Temp meter (IC802) input.
55	KEY3	I	Key input.
56	KEY2	I	Key input.
57	KEY1	I	Key input.
58	XINT REC SW	I	Recording head position detect input.
59	UNREG MNT	I	2.8 V voltage monitor input.
60	BAT VC	I	Battery detect signal input.
61	FG IN	I	FG input from motor driver (IC503).
62	NC	—	Not used (Open).
63	FOK PORT	I	Focus OK signal input.
64	——	—	Not used (Open).
65	LCD RESET	O	LCD reset signal output.
66	XJACKDET	I	LINE IN (OPTICAL) jack detection input.
67	OPT DET	I	LINE IN (OPTICAL) optical detection input.
68	XMIC DET	I	MIC (PLUG IN) jack detection.
69	(NC)	—	Not used (Open).
70	FSI (NC)	—	Not used (Open).
71	SPOFF	O	REC head motor control signal output.
72	RSI	O	
73	RH PWM	O	RH constant current control signal output.
74	(NC)	—	Not used (Open).
75	DQSY	I	Subcode Q sync (SCOR) of digital in U-bit CD format from IC601.
76	T COUNT	I	Traverse count signal input.
77	SDI1	I	Serial data input.
78	SDO1	O	Serial data output.
79	SCK1	O	Serial clock output.
80	SQSY	I	SUB-Q/ADIP SYNC input.
81	BEEP	O	BEEP sound output control.
82	XLAT	O	Latch output.
83	NC	—	Not used (Open).
84	TEX	—	Not used (Fixed at “L”).
85	TX	—	Not used (Fixed at “L”).
86	VSS	—	Ground.
87	VDD	—	Power supply pin (+2.8V).
88	NC	—	Not used (Fixed at “H”).
89	XCS ADA	O	A/D, D/A converter chip select output.
90	XPD ADA	O	A/D, D/A converter power down signal output. H : Power down
91	KEY ON	O	SLEEP : L, action : H.
92	XNIMH DET (NC)	—	Not used (Open). (Battery detect switch input.)
93	A MUTE	O	Analog mute control. H : Mute
94	XOPT CTL	O	Power supply control output for an optical input.
95	FFCLR	O	Flip flop clear signal output.
96	XCE NV	O	EEPROM chip select output.
97	SENS	I	SENS input.
98	LDON	O	“H” : APC circuit ON, “L” : APC circuit OFF
99	XSHOCK	I	Track jump detection input from IC601.
100	CLV STB	O	CLV drive control signal output.

6-2. BLOCK DIAGRAM — SERVO SECTION —

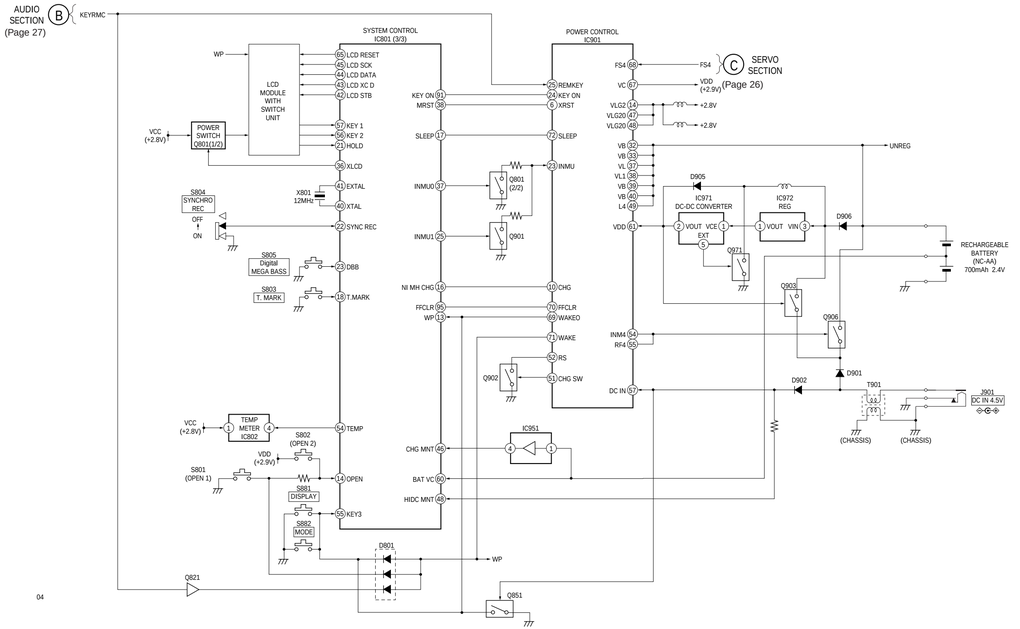


- Signal path
  : PLAY(DIGITAL)
  : REC(DIGITAL)
- R-ch : same as L-ch.

6-3. BLOCK DIAGRAM — AUDIO SECTION —



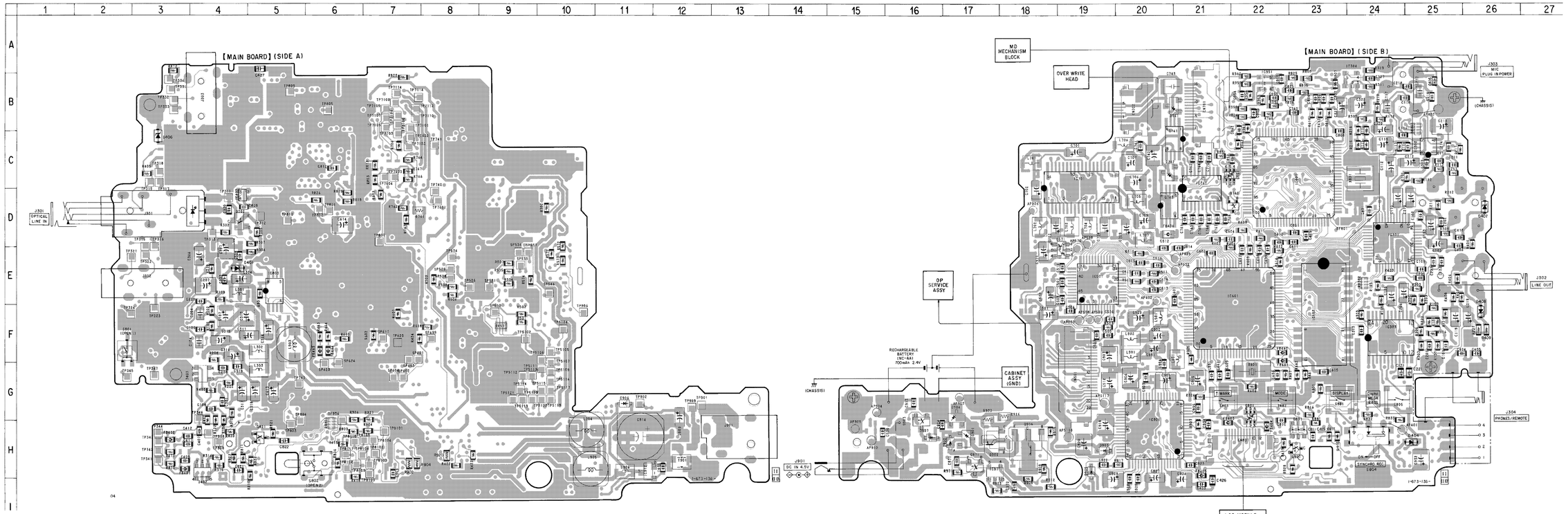
6-4. BLOCK DIAGRAM — SYSTEM CONTROL SECTION —



6-5. PRINTED WIRING BOARD

• **Semiconductor Location**

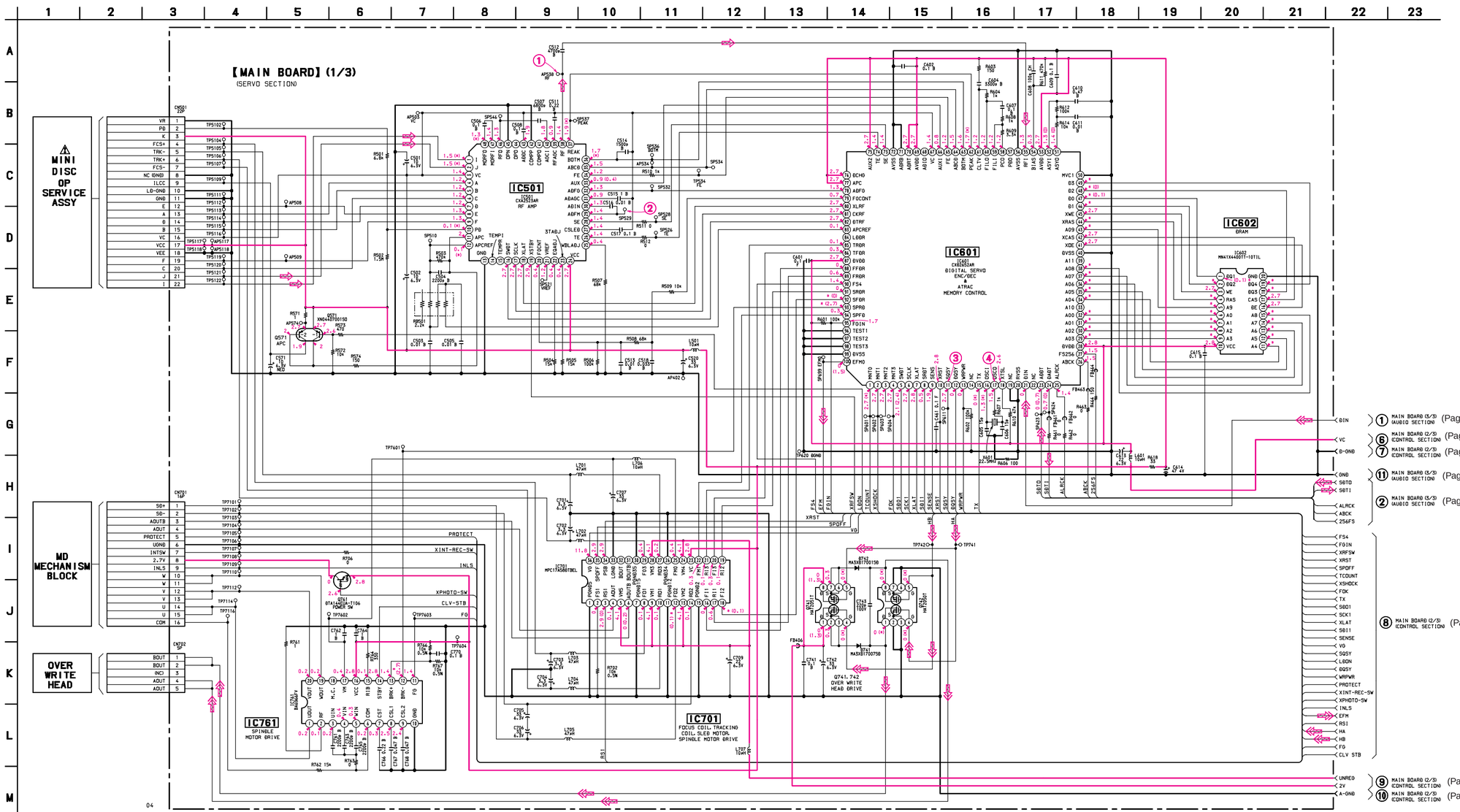
Ref. No.	Location
D401	E-4
D402	H-4
D403	G-3
D404	H-25
D406	C-3
D407	D-26
D408	F-26
D741	B-20
D742	C-20
D801	G-22
D901	H-17
D902	H-16
D903	H-19
D904	G-17
D905	H-19
D906	G-11
D907	H-16
IC301	D-24
IC302	C-25
IC303	F-24
IC304	A-23
IC501	E-19
IC601	E-21
IC602	F-23
IC701	C-19
IC761	C-21
IC801	C-22
IC802	D-4
IC803	E-5
IC901	G-20
IC951	B-22
IC971	H-17
IC972	H-11
J301	D-3
Q302	D-4
Q571	D-18
Q741	B-20
Q742	D-20
Q761	D-21
Q801	G-22
Q821	H-5
Q851	C-21
Q901	H-22
Q902	H-17
Q903	G-16
Q906	H-18
Q971	H-17



Note:
- ——— : parts extracted from the conductor side.
- ▨ : Pattern from the side which enables seeing. (The other layer's patterns are not indicated.)

Caution:
Pattern face side: (Side B) Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A) Parts on the parts face side seen from the parts face are indicated.

6-6. SCHEMATIC DIAGRAM — MAIN SECTION (1/3) — • Refer to page 44 for IC Block Diagrams.



• **Waveforms**

1. VOLT/DIV : 0.5V AC
TIME/DIV : 1μsec
1.0±0.3Vp-p
IC501 (38)

2. VOLT/DIV : 0.1V AC
TIME/DIV : 0.1msec
Approx. 0.5Vp-p
IC501 (29)

3. VOLT/DIV : 1V AC
TIME/DIV : 5msec
2.8Vp-p
13.4msec
IC601 (11)

4. VOLT/DIV : 1V AC
TIME/DIV : 20nsec
2.6Vp-p
22.5MHz
IC601 (17)

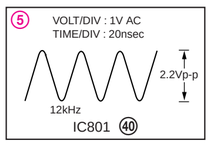
Note:
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ▬▬ : B+ Line.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
  ✻ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : PB (digital)
  ⇨ : REC (digital)

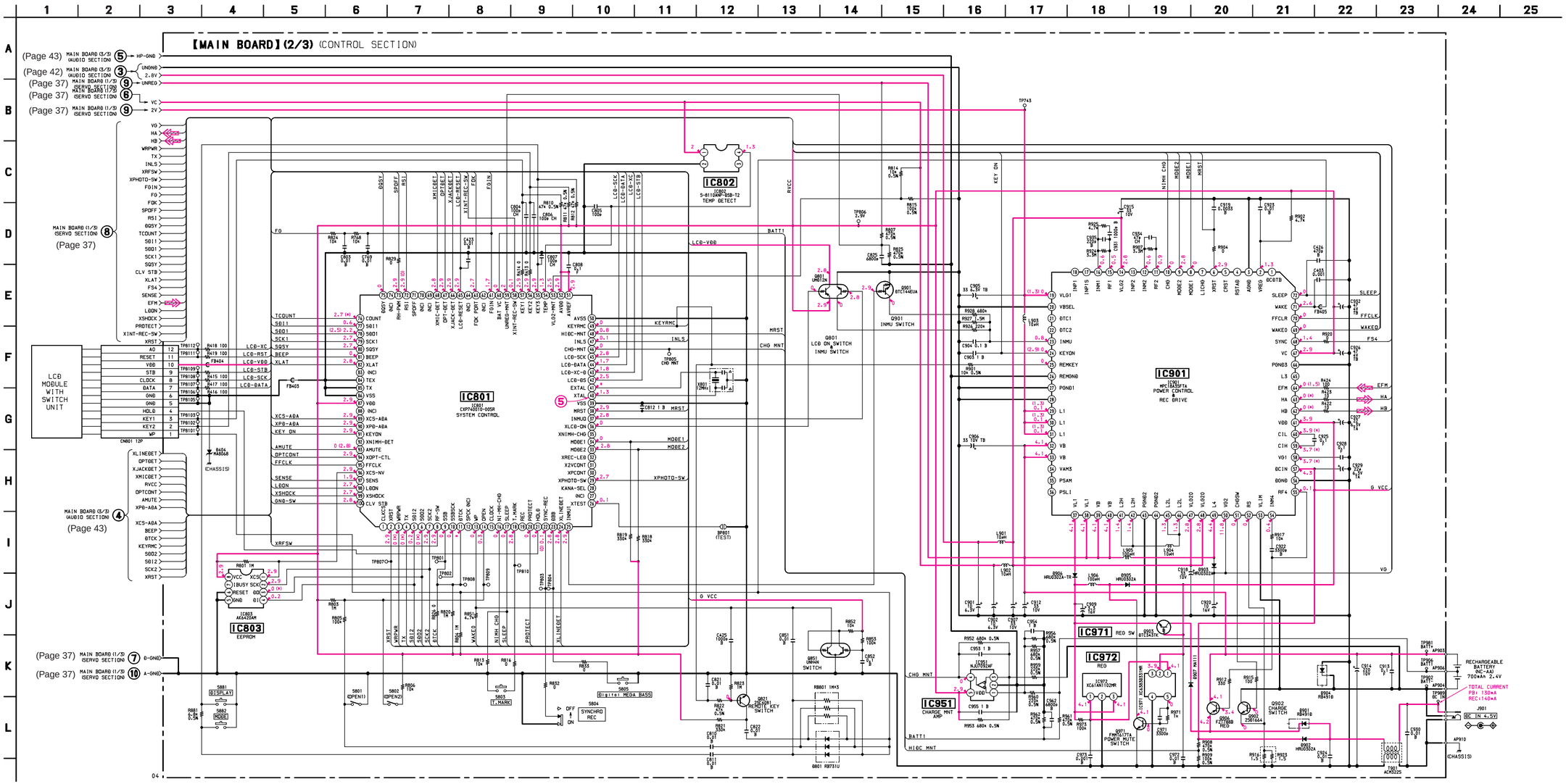
6-7. SCHEMATIC DIAGRAM — MAIN SECTION (2/3) — • Refer to page 44 for IC Block Diagrams.

• **Waveform**

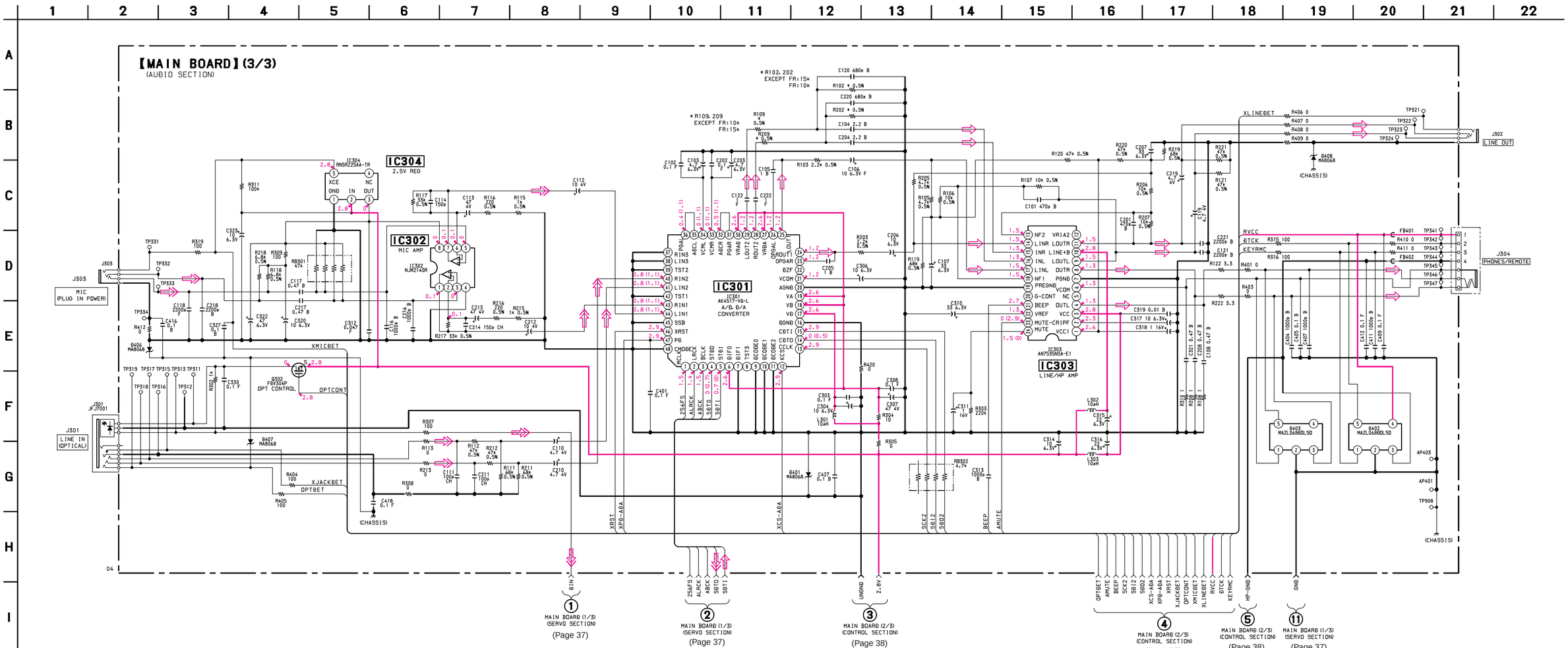


Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- ▭ : panel designation.
- ▬ : B+ Line.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB
  ( ) : REC
  ✻ : Impossible to measure
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ⇨ : REC (digital)



6-8. SCHEMATIC DIAGRAM — MAIN SECTION (3/3) — • Refer to page 44 for IC Block Diagrams.

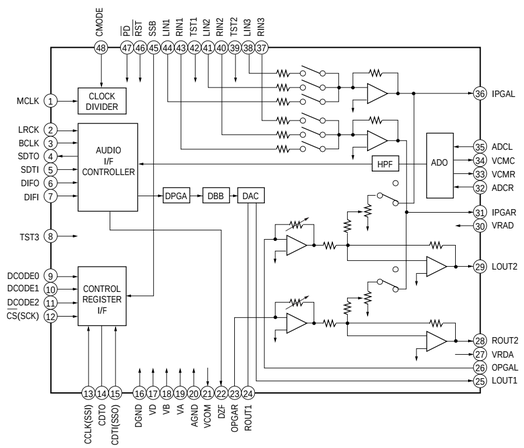


Note:

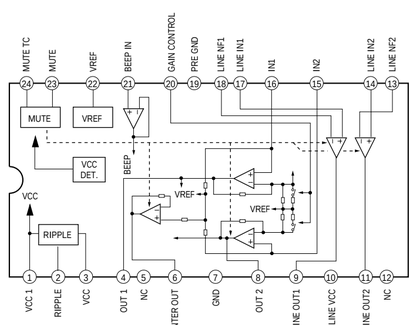
- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- % : indicates tolerance.
- ▭ : panel designation.
- ▬ : B+ Line.
- Power voltage is dc 4.5 V and fed with regulated dc power supply from external power voltage jack.
- Voltage is dc with respect to ground under no-signal condition.
  no mark : PB
  ( ) : REC
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : PB (analog)
  ⇨ : REC (analog)
  ⇨ : PB (digital)
  ⇨ : REC (digital)

• IC Block Diagrams

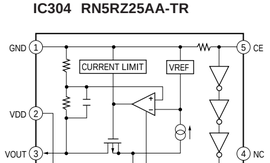
IC301 AK4517-VQ-L



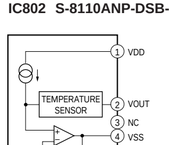
IC303 AN7535SA-E1



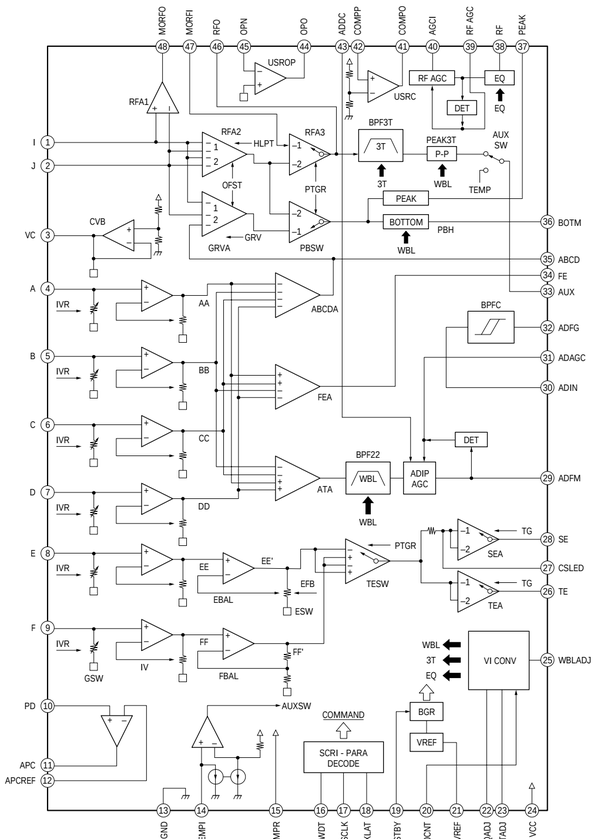
IC304 RN5RZ25AA-TR



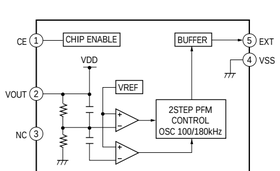
IC802 S-8110ANP-DSB-T2



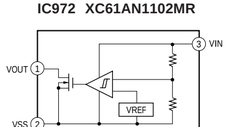
IC501 CXA2523AR



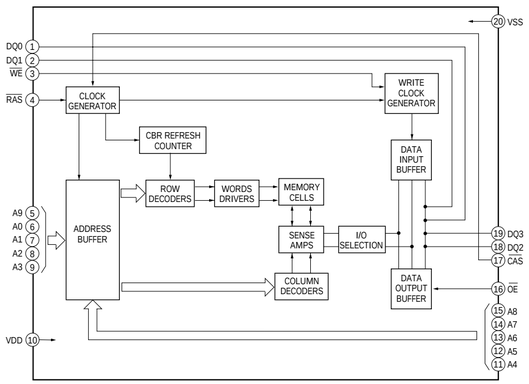
IC971 XC6383D331MR



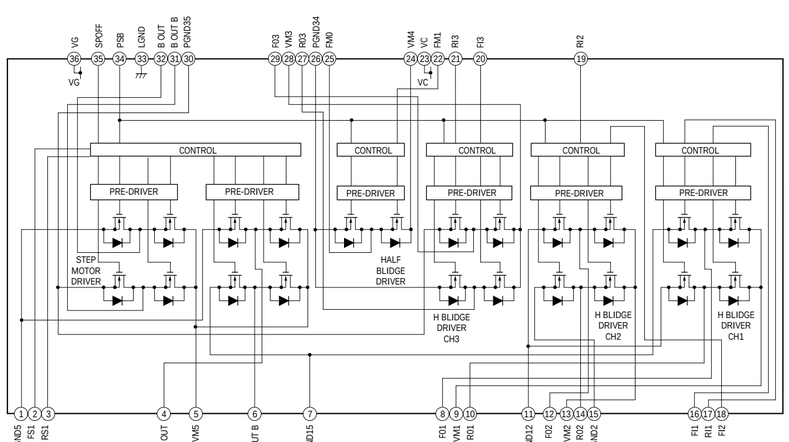
IC972 XC61AN1102MR



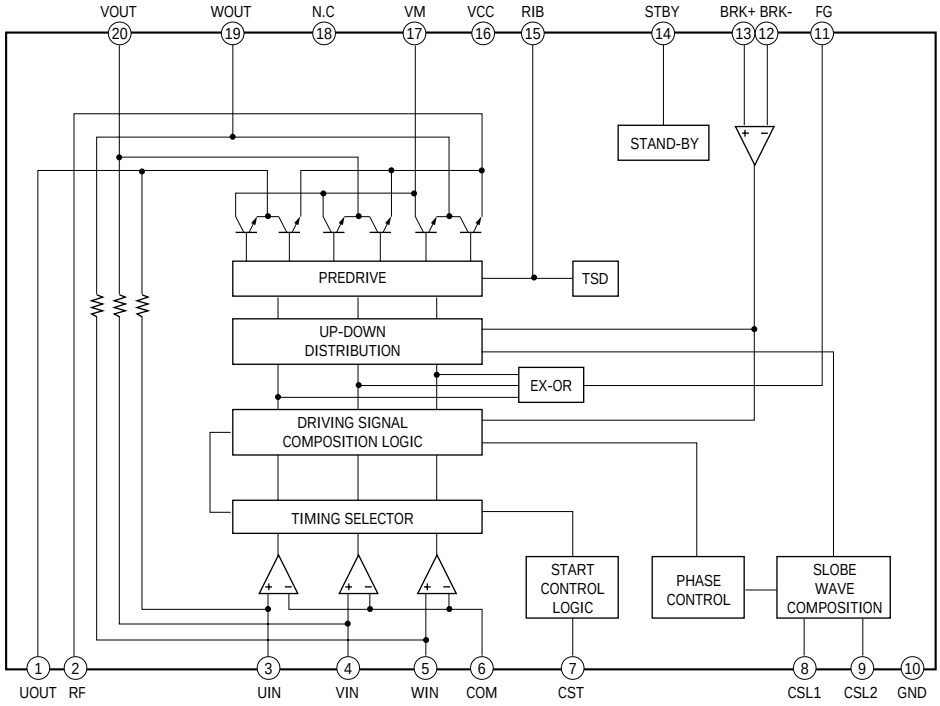
IC602 MN41X4400TT-10TIL



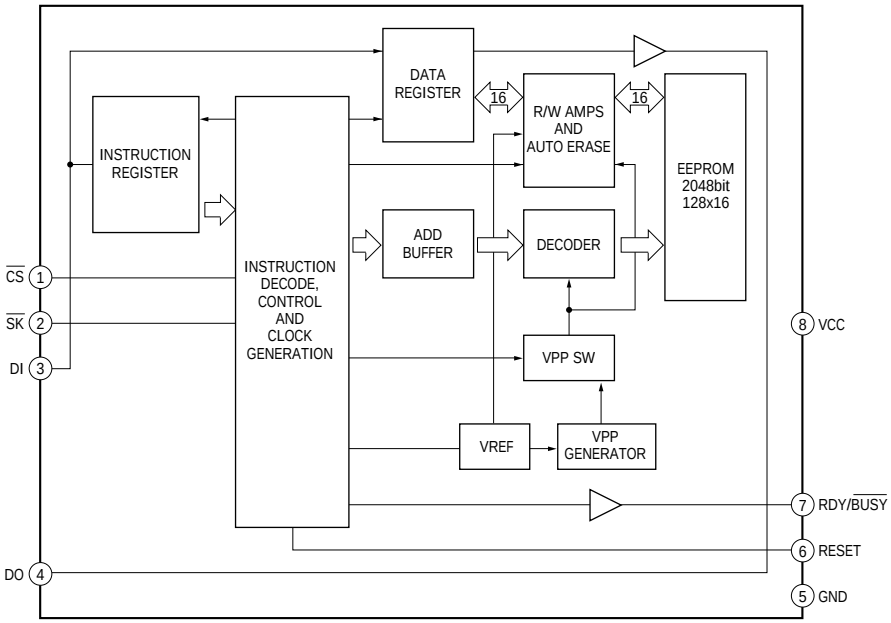
IC701 MPC17A58DTBEL



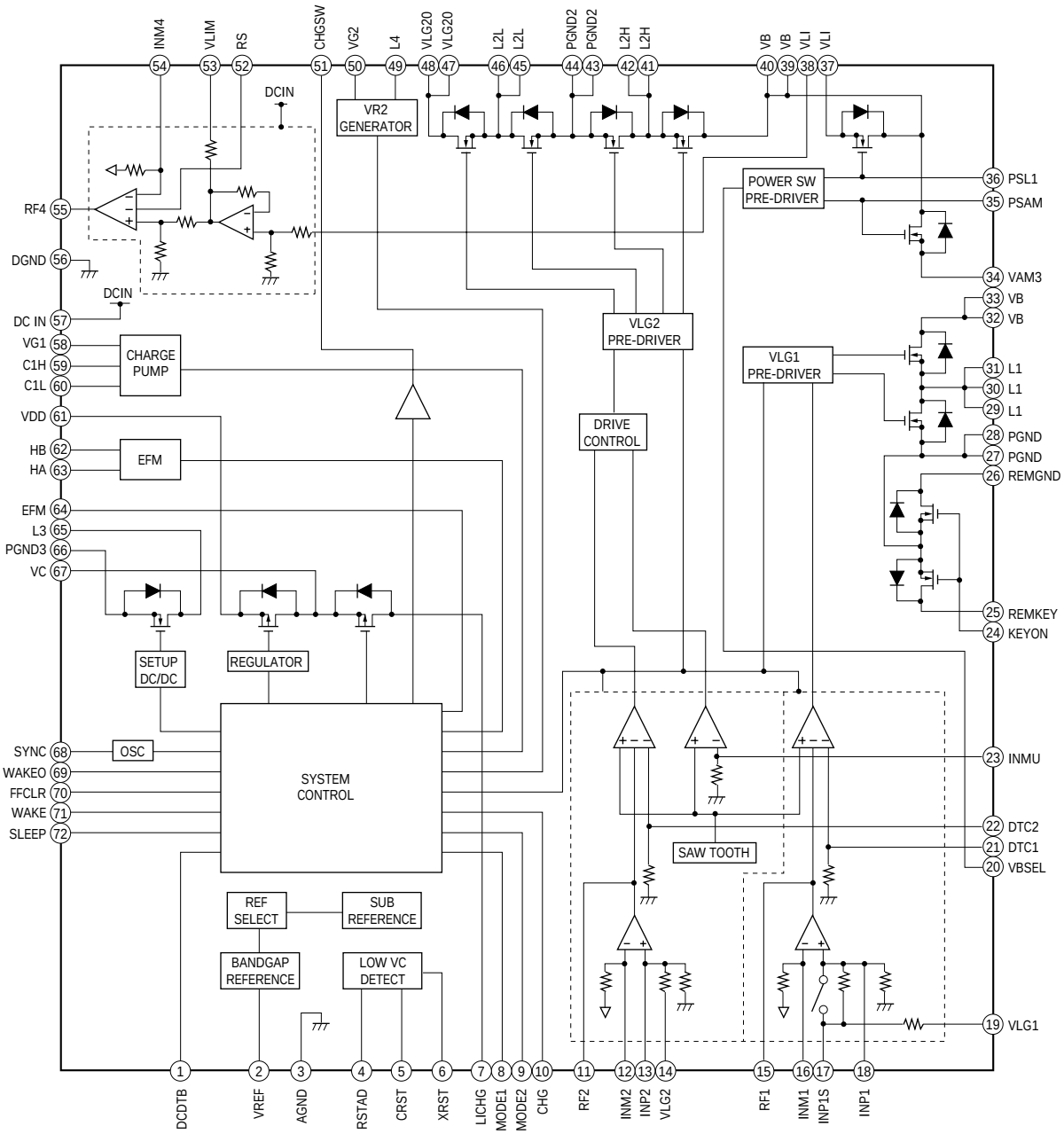
IC761 BA6966FV-E2



IC803 AK6420AM-E



IC901 MPC18A35FTA



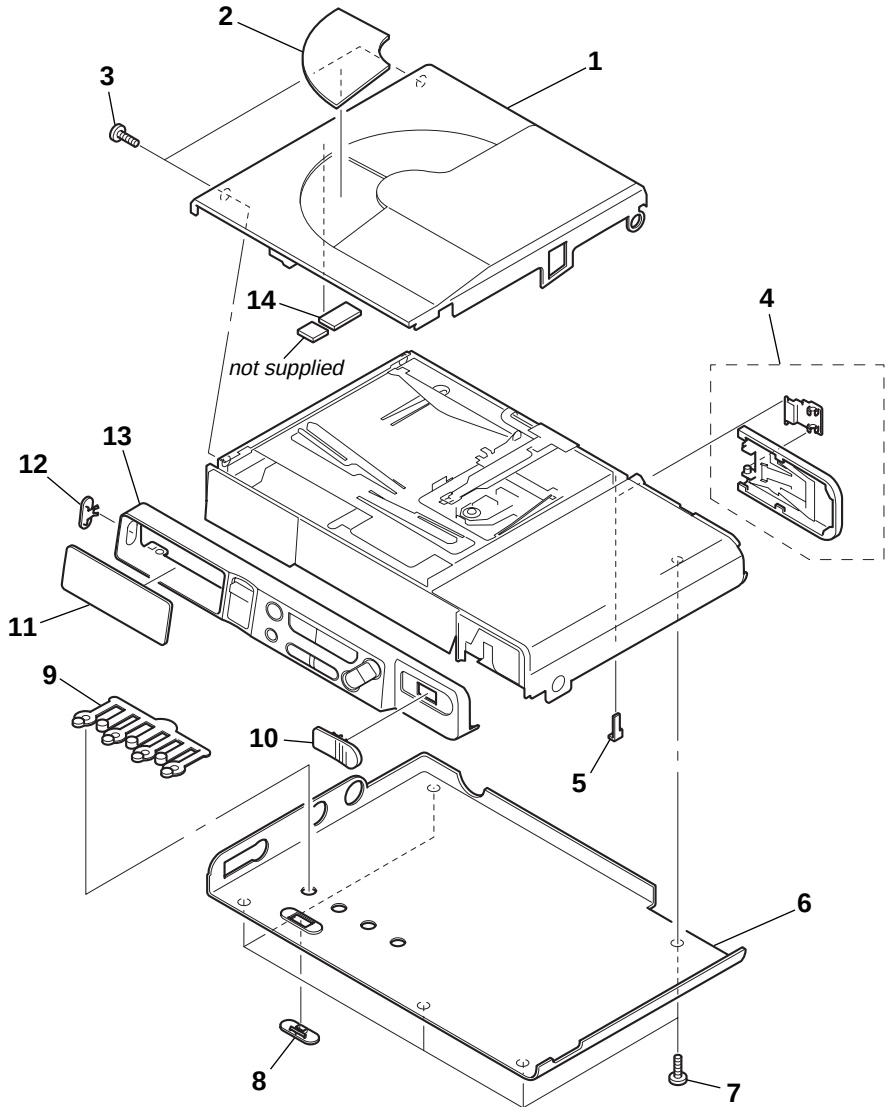
SECTION 7
EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Abbreviation
  CND : Canadian model
  FR : French model
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE) ... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Accessories and packing materials are given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

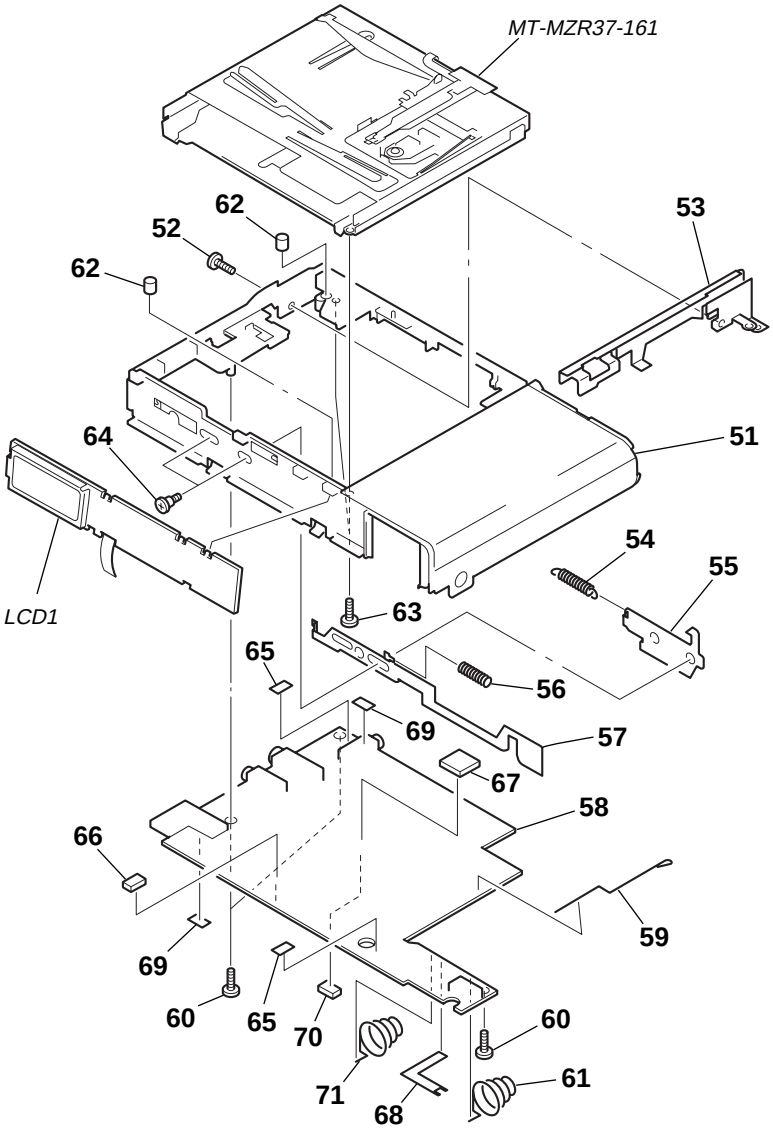
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

7-1. PANEL SECTION



Ref. No.	Part No.	Description	Remark
1	X-4951-492-1	PANEL (S) ASSY, UPPER (SILVER)	
1	X-4951-493-1	PANEL (L) ASSY, UPPER (BLUE)	(EXCEPT US,CND)
2	4-216-591-01	PLATE, ORNAMENTAL	
3	4-963-883-41	SCREW (M1.4), PRECISION PAN	
4	X-4950-928-1	LID (S) ASSY, BATTERY CASE (SILVER)	
4	X-4950-929-1	LID (L) ASSY, BATTERY CASE (BLUE)	(EXCEPT US,CND)
5	4-217-749-01	BEARING (STOPPER)	
6	4-216-610-01	PANEL, BOTTOM (SILVER)	
6	4-216-610-11	PANEL, BOTTOM (BLUE) (EXCEPT US,CND)	
7	3-318-382-11	SCREW (1.7X4.5), TAPPING	
8	4-216-597-01	KNOB (SYNCHRO)	
9	4-216-611-01	BUTTON	
10	4-216-607-01	KNOB (OPEN) (SILVER)	
10	4-216-607-11	KNOB (OPEN) (BLUE) (EXCEPT US,CND)	
11	4-216-600-01	WINDOW (LCD)	
12	4-216-606-01	KNOB (HOLD) (SILVER)	
12	4-216-606-11	KNOB (HOLD) (BLUE) (EXCEPT US,CND)	
13	X-4951-494-1	PANEL (S) ASSY, FRONT (SILVER)	
13	X-4951-495-1	PANEL (L) ASSY, FRONT (BLUE)	(EXCEPT US,CND)
14	4-219-748-01	SPACER (HOLDER)	

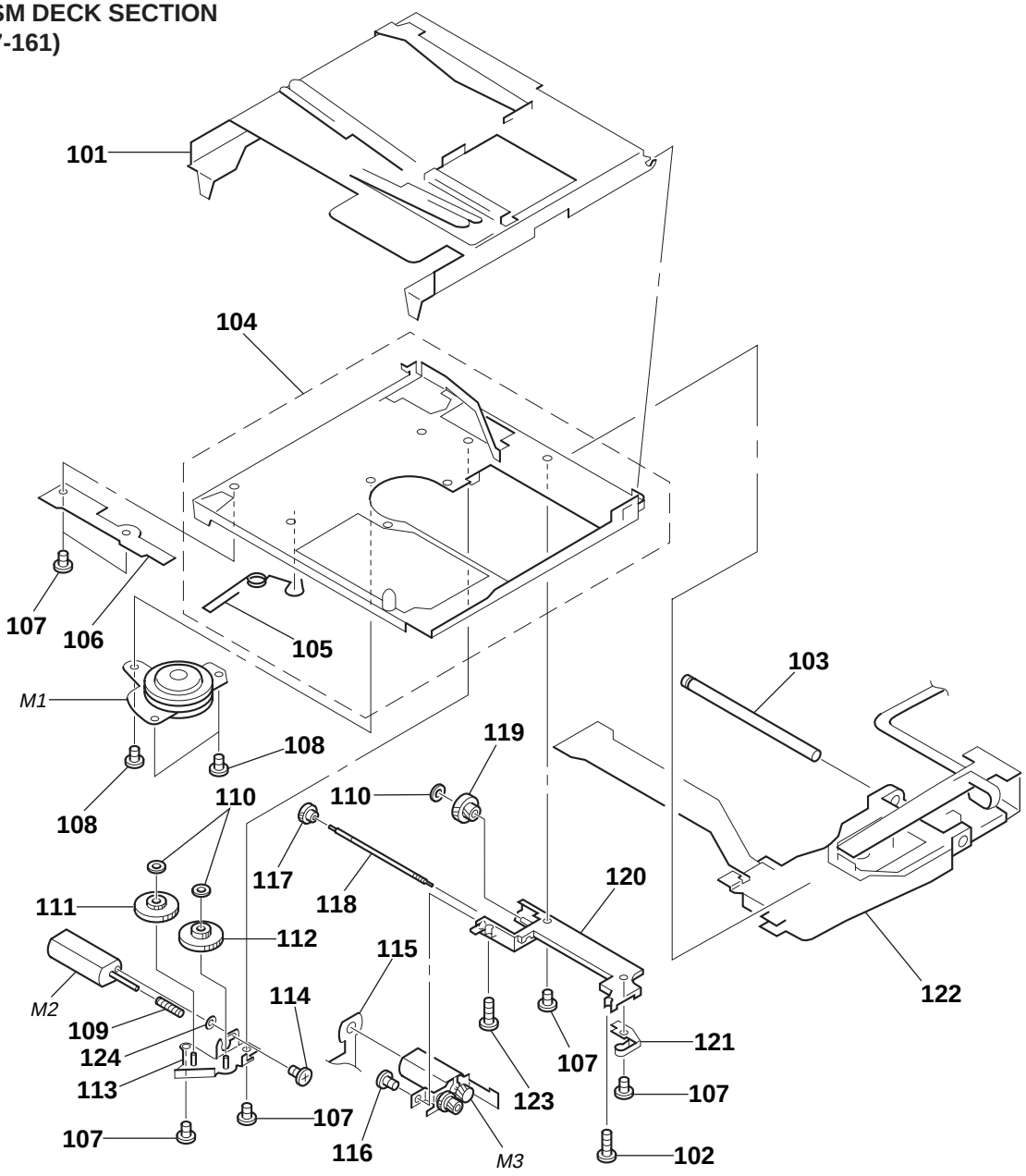
7-2. CABINET (SV) ASSY SECTION



Ref. No.	Part No.	Description	Remark
51	X-4951-496-1	CABINET (S) ASSY (SILVER)	
51	X-4951-497-1	CABINET (L) ASSY (BLUE) (EXCEPT US,CND)	
52	4-963-883-41	SCREW (M1.4), PRECISION PAN	
53	X-4950-927-1	PLATE ASSY, FULCRUM	
54	4-216-593-01	SPRING (LOCK), TENSION	
55	4-216-584-01	LEVER (LOCK)	
56	4-216-594-01	SPRING (OPEN), COMPRESSION	
57	4-216-583-01	LEVER (OPEN)	
58	A-3323-122-A	MAIN BOARD, COMPLETE (FR)	
58	A-3323-123-A	MAIN BOARD, COMPLETE (US,CND)	
58	A-3323-124-A	MAIN BOARD, COMPLETE (EXCEPT US,CND,FR)	
59	4-216-592-01	TERMINAL (A), BATTERY DETECTION	
60	3-318-382-11	SCREW (1.7X4.5), TAPPING	

Ref. No.	Part No.	Description	Remark
61	4-216-598-01	SPRING, BATTERY COIL	
62	4-212-820-01	DAMPER	
63	4-982-382-11	SCREW (MD), STEP	
64	4-216-585-01	SCREW, STEP	
65	4-220-363-01	SPACER (POWER)	
66	4-219-746-01	SPACER (MD)	
67	4-216-582-11	SPACER	
68	4-219-414-01	PLATE, RADIATION	
69	4-220-364-01	SPACER (MIC A)	
70	4-219-747-01	SPACER (MAIN)	
71	4-220-442-01	SPRING (A), BATTERY COIL	
LCD1	1-803-367-11	LCD MODULE	

7-3. MECHANISM DECK SECTION (MT-MZR37-161)



The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
101	X-4950-391-1	HOLDER ASSY	
102	3-704-197-31	SCREW (M1.4X3.0), LOCKING	
103	4-212-312-01	SHAFT, MAIN	
104	X-4950-390-1	CHASSIS ASSY	
105	4-995-585-11	SPRING (LIMITER), TORSION	
106	1-418-079-11	PR UNIT	
107	4-963-883-41	SCREW (M1.4), PRECISION PAN	
108	4-963-883-01	SCREW (M1.4), PRECISION PAN	
109	4-212-308-01	GEAR, WORM	
110	3-338-645-31	WASHER (0.8-2.5)	
111	4-212-310-01	GEAR (RACK)	
112	4-212-309-01	GEAR (WORM WHEEL)	
113	X-4950-392-1	CHASSIS ASSY, GEAR	
114	4-212-862-01	SCREW (M1X1.3), PRECISION	
115	1-671-605-11	MD FLEXIBLE BOARD	
116	3-015-033-01	SCREW (DIA. 1.4X4), PRECISION	
117	4-995-586-01	GEAR (SD)	
118	4-900-615-01	SCREW, LEAD	
119	4-995-578-01	GEAR (SC)	
120	X-4949-131-1	BRACKET (S) ASSY	
121	4-995-571-01	SPRING, THRUST	
⚠122	A-3328-294-A	OP SERVICE ASSY	
123	4-997-172-01	SCREW (M1.4X3)	
124	4-216-266-01	WASHER (MOTOR HEAD)	
M1	1-763-011-11	MOTOR (SPINDLE) (INCLUDING TURN TABLE)	
M2	1-763-174-21	MOTOR, DC (LOADING)	
M3	A-3311-972-A	MOTOR BLOCK ASSY, SLED (SLED)	

MAIN

SECTION 8
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Abbreviation
  CND : Canadian model
  FR : French model
  EE : East European model
  AUS : Australian model
  JE : Tourist model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : µ, for example:
  uA.. : µA.. uPA.. : µPA..
  uPB.. : µPB.. uPC.. : µPC.. uPD.. : µPD..
- CAPACITORS
  uF : µF
- COILS
  uH : µH

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
	A-3323-122-A	MAIN BOARD, COMPLETE (FR)			
	A-3323-123-A	MAIN BOARD, COMPLETE (US,CND)			
	A-3323-124-A	MAIN BOARD, COMPLETE (EXCEPT US,CND,FR)			
		**********			
		< CAPACITOR >			
C101	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C102	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C103	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C104	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C105	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C106	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C107	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C108	1-113-619-11	CERAMIC CHIP	0.47uF	10%	6.3V
C110	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C111	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C112	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C113	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C114	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C116	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C117	1-125-985-11	CERAMIC CHIP	0.47uF	10%	25V
C118	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C119	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C120	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C121	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C122	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C201	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C202	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C203	1-119-660-11	TANTAL. CHIP	4.7uF	20%	6.3V
C204	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V
C205	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C206	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C207	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C208	1-113-619-11	CERAMIC CHIP	0.47uF	10%	6.3V
C210	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C211	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C212	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C213	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C214	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C216	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C217	1-125-985-11	CERAMIC CHIP	0.47uF	10%	25V
C218	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C219	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C220	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
C221	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V

Ref. No.	Part No.	Description			Remark
C222	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C303	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C304	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C306	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C307	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C308	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C310	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C311	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C312	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C313	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C314	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C315	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C316	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C317	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C318	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C319	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C320	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C321	1-117-863-11	CERAMIC CHIP	0.47uF	10%	6.3V
C322	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C323	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C327	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C330	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C401	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C403	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C404	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C405	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C407	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C409	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C411	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C412	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C416	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C418	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C423	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C425	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C426	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C427	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C461	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C501	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C502	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C504	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C505	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C506	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C507	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C508	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark
C511	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C512	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C515	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C516	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C517	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C518	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C520	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C571	1-115-169-11	TANTALUM	10uF	20%	6.3V
C601	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C602	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C604	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C605	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C606	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C607	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C608	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C609	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C610	1-113-619-11	CERAMIC CHIP	0.47uF	10%	6.3V
C611	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C613	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C614	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C615	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C701	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C702	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C703	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C704	1-104-912-11	TANTAL. CHIP	3.3uF	20%	6.3V
C705	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C706	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C707	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C709	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C741	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C742	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C743	1-109-814-11	CERAMIC CHIP	220PF	5%	100V
C761	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C762	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C763	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C764	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C765	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C766	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C767	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C768	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C769	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C770	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C803	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C804	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C805	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C806	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C807	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C808	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C810	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C811	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C812	1-115-156-11	CERAMIC CHIP	1uF		10V
C821	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C822	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C825	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C851	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C852	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C901	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C902	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C903	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C904	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C905	1-119-661-11	TANTAL. CHIP	33uF	20%	6.3V
C906	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C907	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C909	1-104-912-11	TANTAL. CHIP	3.3uF	20%	16V
C912	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C913	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C914	1-128-394-11	ELECT CHIP	220uF	20%	10V
C915	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C918	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C919	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C920	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C922	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C923	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C924	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C925	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C926	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C927	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C928	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C929	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C930	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C931	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C932	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C934	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C935	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C953	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C954	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C955	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C962	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C971	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C972	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C973	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V

< CONNECTOR >

CN501	1-691-386-11	CONNECTOR, FFC/FPC 22P
CN701	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P
CN702	1-778-711-11	CONNECTOR, FFC/FPC (ZIF) 5P
CN801	1-691-376-21	CONNECTOR, FFC/FPC 12P

< DIODE >

D401	8-719-017-58	DIODE MA8068
D402	8-719-068-83	DIODE MAZL068D0LS0-TX/L
D403	8-719-068-83	DIODE MAZL068D0LS0-TX/L
D404	8-719-017-58	DIODE MA8068
D406	8-719-017-58	DIODE MA8068
D407	8-719-017-58	DIODE MA8068
D408	8-719-017-58	DIODE MA8068
D741	8-719-072-77	DIODE MA3XD17001SO
D742	8-719-072-77	DIODE MA3XD17001SO

MAIN

Ref. No.	Part No.	Description	Remark
D801	8-719-045-67	DIODE RB731U-T108	
D901	8-719-066-16	DIODE RB491D-T146	
D902	8-719-047-73	DIODE HRU0302A-TR	
D903	8-719-047-73	DIODE HRU0302A-TR	
D904	8-719-066-16	DIODE RB491D-T146	
D905	8-719-047-73	DIODE HRU0302A-TR	
D906	8-719-047-73	DIODE HRU0302A-TR	
D907	8-719-404-50	DIODE MA111-TX	
		< FERRITE BEAD >	
FB401	1-414-228-21	INDUCTOR, FERRITE BEAD	
FB402	1-414-228-21	INDUCTOR, FERRITE BEAD	
FB403	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB404	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB405	1-500-329-21	INDUCTOR, FERRITE BEAD	
FB406	1-414-234-22	INDUCTOR, FERRITE BEAD	
FB461	1-216-864-11	METAL CHIP 0 5%	1/16W
FB462	1-216-864-11	METAL CHIP 0 5%	1/16W
FB463	1-414-228-21	INDUCTOR, FERRITE BEAD	
FB464	1-414-228-21	INDUCTOR, FERRITE BEAD	
		< IC >	
IC301	8-759-584-59	IC AK4517A-VQ-L	
IC302	8-759-572-38	IC NJM2140R	
IC303	8-759-584-58	IC AN7535NSA-E1	
IC304	8-759-559-91	IC RN5RZ25AA-TR	
IC501	8-752-080-95	IC CXA2523AR	
IC601	8-752-384-47	IC CXD2652AR	
IC602	8-759-565-50	IC XN41X4400TT-10TIL	
IC701	8-759-559-60	IC MPC17A58DTBEL	
IC761	8-759-559-62	IC BA6966FV-E2	
IC801	8-752-902-01	IC CXP740010-005R	
IC802	8-759-559-93	IC S-8110ANP-DSB-T2	
IC803	8-759-468-72	IC AK6420AM-E2	
IC901	8-759-559-59	IC MPC18A35FTA	
IC951	8-759-528-75	IC NJU7092AF-TE2	
IC971	8-759-585-38	IC XC6383D331MR	
IC972	8-759-173-00	IC XC61AN1102MR	
J301	8-749-015-24	IC JFJ7000 (LINE IN (OPTICAL))	
		< JACK >	
J302	1-779-881-11	JACK (LINE OUT)	
J303	1-779-881-21	JACK (MIC (PLUG IN POWER))	
J304	1-778-179-11	JACK (PHONES/REMOTE)	
J901	1-778-153-11	JACK, DC (POLARITY UNIFIED TYPE)	(DC IN 4.5V)
		< COIL >	
L301	1-414-398-11	INDUCTOR 10uH	
L302	1-414-398-11	INDUCTOR 10uH	
L303	1-414-398-11	INDUCTOR 10uH	
L501	1-414-398-11	INDUCTOR 10uH	
L601	1-414-398-11	INDUCTOR 10uH	
L701	1-410-389-31	INDUCTOR CHIP 47uH	
L702	1-410-389-31	INDUCTOR CHIP 47uH	
L703	1-410-389-31	INDUCTOR CHIP 47uH	
L704	1-410-389-31	INDUCTOR CHIP 47uH	
L705	1-410-389-31	INDUCTOR CHIP 47uH	
L706	1-414-398-11	INDUCTOR 10uH	
L707	1-414-398-11	INDUCTOR 10uH	
L901	1-414-398-11	INDUCTOR 10uH	
L902	1-414-398-11	INDUCTOR 10uH	
L903	1-416-344-11	INDUCTOR 10uH	
L904	1-416-344-11	INDUCTOR 10uH	
L905	1-416-510-21	INDUCTOR 100uH	
L906	1-469-426-21	INDUCTOR 100uH	
		< TRANSISTOR >	
Q302	8-729-046-49	TRANSISTOR FDV304P	
Q571	8-729-046-46	TRANSISTOR XN04407001SO	
Q741	8-729-046-43	TRANSISTOR HAT2051T-EL	
Q742	8-729-046-42	TRANSISTOR HAT2050T-EL	
Q761	8-729-028-91	TRANSISTOR DTA144EUA-T106	
Q801	8-729-047-48	TRANSISTOR UMD12N-TR	
Q821	8-729-905-35	TRANSISTOR 2SC4081-R	
Q851	8-729-930-18	TRANSISTOR UMH4-TN	
Q901	8-729-029-14	TRANSISTOR DTC144EUA-T106	
Q902	8-729-920-87	TRANSISTOR 2SD1664-T101-QR	
Q903	8-729-920-19	TRANSISTOR DTC343TK-T146	
Q906	8-729-042-81	TRANSISTOR FZT788BTC	
Q971	8-729-041-51	TRANSISTOR FMMT617TA	
		< RESISTOR >	
R102	1-218-871-11	RES,CHIP 10K 0.50%	1/16W (FR)
R102	1-218-875-11	RES,CHIP 15K 0.50%	1/16W (EXCEPT FR)
R103	1-218-855-11	RES,CHIP 2.2K 0.50%	1/16W
R105	1-218-863-11	RES,CHIP 4.7K 0.50%	1/16W
R106	1-218-871-11	RES,CHIP 10K 0.50%	1/16W
R107	1-218-871-11	RES,CHIP 10K 0.50%	1/16W
R108	1-218-446-11	METAL CHIP 1 5%	1/16W
R109	1-218-871-11	RES,CHIP 10K 0.50%	1/16W (EXCEPT FR)
R109	1-218-875-11	RES,CHIP 15K 0.50%	1/16W (FR)
R111	1-218-891-11	RES,CHIP 68K 0.50%	1/16W
R112	1-218-887-11	RES,CHIP 47K 0.50%	1/16W
R113	1-216-864-11	METAL CHIP 0 5%	1/16W
R115	1-218-847-11	RES,CHIP 1K 0.50%	1/16W
R116	1-218-831-11	RES,CHIP 220 0.50%	1/16W
R117	1-218-883-11	RES,CHIP 33K 0.50%	1/16W
R118	1-218-867-11	RES,CHIP 6.8K 0.50%	1/16W
R119	1-218-891-11	RES,CHIP 68K 0.50%	1/16W
R120	1-218-887-11	RES,CHIP 47K 0.50%	1/16W
R121	1-218-887-11	RES,CHIP 47K 0.50%	1/16W
R122	1-216-791-11	METAL CHIP 3.3 5%	1/16W
R202	1-218-871-11	RES,CHIP 10K 0.50%	1/16W (FR)

Ref. No.	Part No.	Description			Remark
R202	1-218-875-11	RES,CHIP	15K	0.50%	1/16W (EXCEPT FR)
R203	1-218-855-11	RES,CHIP	2.2K	0.50%	1/16W
R205	1-218-863-11	RES,CHIP	4.7K	0.50%	1/16W
R206	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R207	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R208	1-218-446-11	METAL CHIP	1	5%	1/16W
R209	1-218-871-11	RES,CHIP	10K	0.50%	1/16W (EXCEPT FR)
R209	1-218-875-11	RES,CHIP	15K	0.50%	1/16W (FR)
R211	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R212	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R213	1-216-864-11	METAL CHIP	0	5%	1/16W
R215	1-218-847-11	RES,CHIP	1K	0.50%	1/16W
R216	1-218-831-11	RES,CHIP	220	0.50%	1/16W
R217	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R218	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R219	1-218-891-11	RES,CHIP	68K	0.50%	1/16W
R220	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R221	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R222	1-216-791-11	METAL CHIP	3.3	5%	1/16W
R302	1-216-821-11	METAL CHIP	1K	5%	1/16W
R303	1-216-849-11	METAL CHIP	220K	5%	1/16W
R304	1-216-797-11	METAL CHIP	10	5%	1/16W
R305	1-216-864-11	METAL CHIP	0	5%	1/16W
R307	1-216-809-11	METAL CHIP	100	5%	1/16W
R308	1-216-864-11	METAL CHIP	0	5%	1/16W
R309	1-216-809-11	METAL CHIP	100	5%	1/16W
R310	1-218-446-11	METAL CHIP	1	5%	1/16W
R311	1-216-845-11	METAL CHIP	100K	5%	1/16W
R315	1-216-809-11	METAL CHIP	100	5%	1/16W
R316	1-216-809-11	METAL CHIP	100	5%	1/16W
R319	1-216-809-11	METAL CHIP	100	5%	1/16W
R401	1-216-864-11	METAL CHIP	0	5%	1/16W
R403	1-216-864-11	METAL CHIP	0	5%	1/16W
R404	1-216-809-11	METAL CHIP	100	5%	1/16W
R405	1-216-809-11	METAL CHIP	100	5%	1/16W
R406	1-216-864-11	METAL CHIP	0	5%	1/16W
R407	1-216-864-11	METAL CHIP	0	5%	1/16W
R408	1-216-864-11	METAL CHIP	0	5%	1/16W
R409	1-216-864-11	METAL CHIP	0	5%	1/16W
R410	1-216-864-11	METAL CHIP	0	5%	1/16W
R411	1-216-864-11	METAL CHIP	0	5%	1/16W
R412	1-216-864-11	METAL CHIP	0	5%	1/16W
R413	1-216-864-11	METAL CHIP	0	5%	1/16W
R414	1-216-864-11	METAL CHIP	0	5%	1/16W
R415	1-216-809-11	METAL CHIP	100	5%	1/16W
R416	1-216-809-11	METAL CHIP	100	5%	1/16W
R417	1-216-809-11	METAL CHIP	100	5%	1/16W
R418	1-216-809-11	METAL CHIP	100	5%	1/16W
R419	1-216-809-11	METAL CHIP	100	5%	1/16W
R420	1-216-864-11	METAL CHIP	0	5%	1/16W
R422	1-216-797-11	METAL CHIP	10	5%	1/16W
R423	1-216-797-11	METAL CHIP	10	5%	1/16W
R424	1-216-809-11	METAL CHIP	100	5%	1/16W
R461	1-216-864-11	METAL CHIP	0	5%	1/16W
R462	1-216-864-11	METAL CHIP	0	5%	1/16W
R463	1-216-864-11	METAL CHIP	0	5%	1/16W
R464	1-216-811-11	METAL CHIP	150	5%	1/16W
R501	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R502	1-216-859-11	RES,CHIP	1.5M	5%	1/16W
R503	1-216-853-11	METAL CHIP	470K	5%	1/16W
R504	1-216-835-11	METAL CHIP	15K	5%	1/16W
R505	1-216-835-11	METAL CHIP	15K	5%	1/16W
R506	1-216-845-11	METAL CHIP	100K	5%	1/16W
R507	1-216-843-11	METAL CHIP	68K	5%	1/16W
R508	1-216-843-11	METAL CHIP	68K	5%	1/16W
R509	1-216-833-11	METAL CHIP	10K	5%	1/16W
R510	1-216-821-11	METAL CHIP	1K	5%	1/16W
R511	1-216-864-11	METAL CHIP	0	5%	1/16W
R512	1-216-864-11	METAL CHIP	0	5%	1/16W
R571	1-218-446-11	METAL CHIP	1	5%	1/16W
R572	1-216-833-11	METAL CHIP	10K	5%	1/16W
R573	1-216-817-11	METAL CHIP	470	5%	1/16W
R574	1-216-811-11	METAL CHIP	150	5%	1/16W
R601	1-216-845-11	METAL CHIP	100K	5%	1/16W
R602	1-216-845-11	METAL CHIP	100K	5%	1/16W
R603	1-216-811-11	METAL CHIP	150	5%	1/16W
R604	1-216-821-11	METAL CHIP	1K	5%	1/16W
R606	1-216-809-11	METAL CHIP	100	5%	1/16W
R607	1-216-821-11	METAL CHIP	1K	5%	1/16W
R608	1-216-821-11	METAL CHIP	1K	5%	1/16W
R609	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R610	1-216-841-11	METAL CHIP	47K	5%	1/16W
R611	1-216-853-11	METAL CHIP	470K	5%	1/16W
R612	1-216-845-11	METAL CHIP	100K	5%	1/16W
R614	1-216-833-11	METAL CHIP	10K	5%	1/16W
R618	1-216-803-11	METAL CHIP	33	5%	1/16W
R702	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R706	1-216-864-11	METAL CHIP	0	5%	1/16W
R761	1-217-671-11	METAL CHIP	1	5%	1/10W
R762	1-216-835-11	METAL CHIP	15K	5%	1/16W
R763	1-216-864-11	METAL CHIP	0	5%	1/16W
R764	1-216-815-11	METAL CHIP	330	5%	1/16W
R766	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R767	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R768	1-216-833-11	METAL CHIP	10K	5%	1/16W
R801	1-216-857-11	METAL CHIP	1M	5%	1/16W
R803	1-216-857-11	METAL CHIP	1M	5%	1/16W
R804	1-216-857-11	METAL CHIP	1M	5%	1/16W
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W
R806	1-216-833-11	METAL CHIP	10K	5%	1/16W
R807	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R810	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R811	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R812	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R813	1-216-833-11	METAL CHIP	10K	5%	1/16W
R814	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R815	1-218-895-11	RES,CHIP	100K	0.50%	1/16W

MAIN

Ref. No.	Part No.	Description			Remark
R816	1-216-864-11	METAL CHIP	0	5%	1/16W
R818	1-216-851-11	METAL CHIP	330K	5%	1/16W
R819	1-216-851-11	METAL CHIP	330K	5%	1/16W
R820	1-216-857-11	METAL CHIP	1M	5%	1/16W
R821	1-216-851-11	METAL CHIP	330K	5%	1/16W
R822	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R823	1-216-857-11	METAL CHIP	1M	5%	1/16W
R824	1-216-833-11	METAL CHIP	10K	5%	1/16W
R825	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R826	1-216-864-11	METAL CHIP	0	5%	1/16W
R829	1-216-864-11	METAL CHIP	0	5%	1/16W
R832	1-216-864-11	METAL CHIP	0	5%	1/16W
R833	1-216-864-11	METAL CHIP	0	5%	1/16W
R851	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R852	1-216-833-11	METAL CHIP	10K	5%	1/16W
R853	1-216-845-11	METAL CHIP	100K	5%	1/16W
R881	1-218-867-11	RES,CHIP	6.8K	0.50%	1/16W
R901	1-218-871-11	RES,CHIP	10K	0.50%	1/16W
R902	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R904	1-216-864-11	METAL CHIP	0	5%	1/16W
R907	1-216-863-11	RES,CHIP	3.3M	5%	1/16W
R908	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R909	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R912	1-216-815-11	METAL CHIP	330	5%	1/16W
R915	1-216-809-11	METAL CHIP	100	5%	1/16W
R916	1-217-905-11	RES,CHIP	1.5	5%	1/10W
R917	1-216-833-11	METAL CHIP	10K	5%	1/16W
R920	1-216-864-11	METAL CHIP	0	5%	1/16W
R923	1-217-905-11	RES,CHIP	1.5	5%	1/10W
R924	1-216-863-11	RES,CHIP	3.3M	5%	1/16W
R925	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R926	1-216-849-11	METAL CHIP	220K	5%	1/16W
R927	1-216-859-11	RES,CHIP	1.5M	5%	1/16W
R928	1-216-855-11	METAL CHIP	680K	5%	1/16W
R952	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R953	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R956	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R957	1-218-915-11	RES,CHIP	680K	0.50%	1/16W
R959	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R960	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R961	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R962	1-218-911-11	RES,CHIP	470K	0.50%	1/16W
R971	1-216-821-11	METAL CHIP	1K	5%	1/16W
R973	1-216-845-11	METAL CHIP	100K	5%	1/16W
		< NETWORK RESISTOR >			
RB301	1-233-971-11	RES, NETWORK (CHIP TYPE) 47K			
RB302	1-233-965-11	RES, NETWORK (CHIP TYPE) 4.7K			
RB501	1-233-963-21	RES, NETWORK (CHIP TYPE) 2.2K			
RB801	1-233-979-11	RES, NETWORK (CHIP TYPE) 1M			
		< SWITCH >			
S801	1-762-805-21	SWITCH, PUSH (1 KEY) (OPEN1)			
S802	1-572-467-61	SWITCH, PUSH (1 KEY) (OPEN2)			
S803	1-771-138-21	SWITCH, KEY BOARD (T.MARK)			
S804	1-762-078-11	SWITCH, SLIDE (SYNCHRO REC)			
S805	1-771-138-21	SWITCH, KEY BOARD (Digital MEGA BASS)			
S881	1-771-138-21	SWITCH, KEY BOARD (DISPLAY)			
S882	1-771-138-21	SWITCH, KEY BOARD (MODE)			
		< TRANSFORMER >			
T901	1-416-405-21	FILTER, CHIP EMI (COMMON MODE)			
		< VIBRATOR >			
X601	1-767-722-21	VIBRATOR, CRYSTAL (22.5MHz)			
X801	1-760-174-11	VIBRATOR, SERAMIC (12MHz)			

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MISCELLANEOUS
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106	1-418-079-11	PR UNIT
115	1-671-605-11	MD FLEXIBLE BOARD
⚠122	A-3328-294-A	OP SERVICE ASSY
LCD1	1-803-367-11	LCD MODULE
M1	1-763-011-11	MOTOR (SPINDLE) (INCLUDING TURN TABLE)
M2	1-763-174-21	MOTOR, DC (LOADING)
M3	A-3311-972-A	MOTOR BLOCK ASSY, SLED (SLED)

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ACCESSORIES & PACKING MATERIALS
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⚠	1-418-095-11	ADAPTOR, AC (AC-MZR37) (UK)
⚠	1-418-096-11	ADAPTOR, AC (AC-MZR37) (AUS)
	1-418-110-11	REMOTE CONTROL UNIT (SZR-S17)
⚠	1-467-009-21	ADAPTOR, AC (AC-E455) (US,CND)
⚠	1-467-550-11	ADAPTOR, AC (AC-E455A) (E,JE)
⚠	1-473-116-35	ADAPTOR, AC (AC-E455D) (AEP,FR,EE)
⚠	1-569-007-11	ADAPTOR, CONVERSION 2P (E,JE)
	1-779-504-11	CONNECTOR, OPTICAL (MC-918)
*	3-686-294-02	IC LABEL (INDUSTRY CANADA) (CND)
	3-866-346-11	MANUAL, INSTRUCTION (ENGLISH) (US,AEP,UK,EE,AUS,E,JE)
	3-866-346-21	MANUAL, INSTRUCTION (ENGLISH,FRENCH) (CND,AEP,FR)
	3-866-346-31	MANUAL, INSTRUCTION (GERMAN,DUTCH) (AEP)
	3-866-346-41	MANUAL, INSTRUCTION (ITALIAN) (AEP)
	3-866-346-51	MANUAL, INSTRUCTION (PORTUGUESE, SPANISH) (AEP,JE)
	3-866-346-61	MANUAL, INSTRUCTION (SWEDISH,FINNISH) (AEP)
	3-866-346-71	MANUAL, INSTRUCTION (RUSSIAN,POLISH, CZECH,HUNGARIAN) (EE)
	3-866-346-81	MANUAL, INSTRUCTION (TRADITIONAL CHINESE,SPANISH, KOREAN) (E,JE)
	8-953-278-90	HEADPHONE MDR-A34SP SET (US)
	8-953-304-90	RECEIVER MDR-E805SP SET (EXCEPT US)

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

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Personal A&V Products Company

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